

OS 104



British Birds

December 2015 • Vol.108 • 701–760

NATURAL HISTORY
MUSEUM LIBRARY

- 8 DEC 2015



Birds of Conservation Concern 4



000207060

British Birds

Established 1907, incorporating The Zoologist, established 1843

Published by BB 2000 Limited, trading as 'British Birds'

Registered Office: c/o McPhersons CFG Limited, 23 St Leonards Road
Bexhill on Sea, East Sussex TN40 1HH

ISSN 0007-0335

www.britishbirds.co.uk

Editorial

Roger Riddington
Spindrift, Eastshore,
Virkie, Shetland ZE3 9JS
Tel: 01950 460080

editor@britishbirds.co.uk

'News & comment' material to
Adrian Pitches

adrianpitches@blueyonder.co.uk

Subscriptions & administration

Hazel Jenner
4 Harlequin Gardens,
St Leonards on Sea,
East Sussex TN37 7PF
Tel & fax: 01424 755155

subscriptions@britishbirds.co.uk

Design & production

Mark Corliss
m.corliss@netmatters.co.uk

Advertising

Katie Petchelco, Digital Spring Ltd,
Golden Cross House, 8 Duncannon
Street, London WC2N 4JF
Tel: 0870 803 3737
BB@digital-spring.co.uk

Guidelines for contributors

See www.britishbirds.co.uk

British Birds

Editorial staff Roger Riddington (Editor),
Caroline Dudley, Peter Kennerley

Editorial Board Dawn Balmer, Ian Carter,
Richard Chandler, Martin Collinson,
Mark Holling, Chris Kehoe, Robin
Prytherch, Nigel Redman, Roger
Riddington, Brian Small, Steve Votier

Rarities Committee

Paul French (Chairman), Chris Batty,
Chris Bradshaw, David Fairhurst,
Nic Hallam, Micky Maher,

Richard Millington, Mike Pennington,
Richard Schofield, Steve Votier

Secretary Nigel Hudson, Carn Ithen, Trench
Lane, Old Town, St Mary's, Scilly TR21 0PA;
secretary@bbrc.org.uk

Notes Panel

Angela Turner (Chair), Will Cresswell,
Ian Dawson, Jim Flegg, Ian Newton,
Malcolm Ogilvie

Annual subscription rates

Individual subscriptions: UK – £54.00

Overseas (airmail) – £62.00

Libraries and agencies – £102.00

Subscribe by Direct Debit and
save £2.00 off the above rates

Back issues

available from www.britishbirds.co.uk

British Birds is owned and published by BB 2000 Limited, the directors of which are Adam Rowlands (Chairman), Richard Aspinall, Mark Holling, Conor Jameson, Ian Packer and Adrian Pitches.

BB 2000 Limited is wholly owned by The British Birds Charitable Trust (registered charity No. 1089422), whose trustees are Bryan Barnacle, Neil Bucknell, Jeremy Greenwood, Ian Newton and Richard Porter. Directors and trustees are volunteers who draw no remuneration.

Copyright: When submitting articles, letters, commentary, text, photographs, artwork, figures or images (the 'Copyright Work') to the Editor, you are agreeing to grant to *British Birds* a perpetual, irrevocable, non-exclusive, royalty-free, copyright licence to use, edit, alter, adapt, translate, copy, publish, continue to publish or republish the Copyright Work (and/or an edited, adapted or translated version of it or part of it) in all forms, formats and media (including, but not limited to, print, digital and electronic forms) anywhere in the world. You must ensure that by submitting a Copyright Work that you are not infringing the Copyright of any other person. By submitting a Copyright Work you are warranting that you are the Copyright Work owner and that you have the right to grant the non-exclusive licence described above. For the avoidance of doubt, the Author/Artist shall remain the owner of the Copyright Work.

Front-cover photograph: The Eurasian Curlew, now arguably the greatest bird conservation priority in the UK; Lammermuir Hills, Borders, June 2010. *Phil McLean/FLPA*



OPTICAL CENTRE

ED FF

8x42 • 10x42

BRINGING A NEW LEVEL OF VIEWING EXPERIENCE THE ED-FF PROVIDES STUNNING EDGE TO EDGE CLARITY THANKS TO THE FIELD FLATTENING LENSES.

Key Features

- Premium extra low dispersion ED glass
- Field flattening glass
- Rugged rubber armour body
- Lightweight magnesium alloy
- Wide field of view
- Fully waterproof
- Oilphobic coating repels water & dirt



FROM

£399.99

ED PRO

8x42 • 10x42

THIS PREMIUM MODEL ENABLES YOU TO CAPTURE NATURE IN AMAZING CLARITY AND DETAIL WITH CLEAR AND NEUTRAL COLOUR REPRODUCTION.

Key Features

- ED glass objective lenses providing brighter, sharper images
- Ergonomic open hinge design
- Magnesium alloy body
- Fully waterproof
- Oilphobic protective lens coating
- Rugged yet lightweight
- Wide field of view
- Outstanding build quality



FROM

£599.99

50mm ED PRO

50mm • 12-36x Zoom Eyepiece

PREMIUM COMPACT SCOPE WITH HIGH QUALITY ED GLASS.

ONLY

£399.00

Key Features

- High performance ED glass
- Easy to use focusing
- Ergonomic design
- Rugged rubber armouring
- Outstanding build quality
- Retractable sun shade
- Very compact size



IN STOCK NOW!



10x30 AIS Image Stabilised Monocular

No.1 Destination for all things photographic and optical

london camera exchange

15 The Square, Winchester. SO23 9ES

01962 866203

email: winchester@LCEgroup.co.uk



The moment nature has been waiting for.
Discover the new ZEISS VICTORY SF.



// FASCINATION
MADE BY ZEISS



Enhance Your Passion for Birding

The new ZEISS VICTORY SF will get you closer to wildlife than ever before. VICTORY SF is the most user friendly and exhilarating pair of observation binoculars we have ever produced – featuring an outstanding field of view, high transmission and very light weight. Developed especially to appreciate your birding moments.



Discover the new ZEISS VICTORY SF and join us at:
www.zeiss.com/nature



01223 401 525

customer care.uk@zeiss.com

We make it visible.



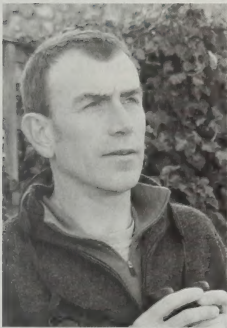
British Birds

Volume 108 • Number 12 • December 2015

NATURAL HISTORY
MUSEUM LIBRARY

- 8 DEC 2015

- 702 *BB eye* David Agombar
- 704 News and comment Adrian Pitches
- 708 Birds of Conservation Concern 4: the population status of birds in the UK, Channel Islands and Isle of Man Mark Eaton, Nicholas Aebischer, Andy Brown, Richard Hearn, Leigh Lock, Andy Musgrove, David Noble, David Stroud and Richard Gregory
- 747 The Bearded Tit in the UK: conservation and management issues Iain Malzer and Rodney West
- 754 Notes
- 756 Reviews
- 758 Recent reports



It's hard not to feel disheartened by the fourth Birds of Conservation Concern review, which fills most of this issue. That might seem like a defeatist opening line but I'm struggling to see it any other way. Despite the fact that some birds have responded to targeted and well-designed conservation management – species such as Bittern and Stone-curlew – the overall trend is for a shift towards the red end of the spectrum. The rate at which some of these changes are taking place is pretty sobering too. We have been talking about farmland birds, woodland birds and trans-Saharan migrants for some time now, and it's been clear for even longer that the Wryneck was on a sticky wicket as a British breeding bird; but the concern expressed about some of the other species flagged up here is much more recent. I can't pretend to bring any sophisticated new thinking to the

table, but it seems clear that it's even more important than ever to identify those cases where we can have an impact – and to target our available resources ever more precisely. So I make no apologies for choosing a Curlew for the front cover of a second issue in a row – it seemed a lot more appropriate to emphasise that particular message than resort to some faux Christmassy cheer.

Changing the subject completely, let me salute Anthony Cheke (p. 755), who tells me that his short note in this issue is more than 50 years since his last one (p. 23 of Vol. 58). That's impressive! And, hopefully, an encouragement to anyone wondering whether an unusual observation is worth writing up. Short notes in *BB* continue to be a key part of the magazine's DNA, just as the headline papers are. Thanks to all our subscribers for another year of support.

Roger Riddington



British Birds aims to: ❖ provide an up-to-date magazine for everyone interested in the birds of the Western Palearctic; ❖ publish a range of material on behaviour, conservation, distribution, ecology, identification, movements, status and taxonomy as well as the latest ornithological news and book reviews; ❖ maintain its position as the journal of record; and
❖ interpret scientific research on birds in an easily accessible way.

The Hookpod – built to save the albatross

No fewer than 15 of the 22 species of albatross in the world are threatened with extinction, yet it is estimated that over 100,000 albatrosses die *every year* as unintentional casualties of the fishing industry. Many of these meet a grisly end while looking for a meal when they take baited hooks from long-line fishing vessels. And it is not just albatrosses that die in this way: many species of petrels and shearwaters also are affected.

The Hookpod is a British invention being developed to counter this problem. The latest version was trialled in 2014 and, after good progress in 2015, the Hookpod is set to be used commercially in 2016.

Developed through a broad-based collaboration, which includes BirdLife International, generous private investors, marine biologists Becky Ingham and Ben Sullivan, and Devon-based engineers Ben and Pete Kibel, the Hookpod is a remarkably ingenious design. In simple terms, it consists of a polycarbonate housing (the 'pod'), which

encapsulates the barb and releases the baited hook only at a depth that surface-feeding seabirds cannot reach.

After a successful crowdfunding campaign in 2014, which raised over £113,000, Hookpods have been extensively trialled in Australian fisheries. This work proved beyond doubt that the device is almost 100% effective. These trials were crucial, to prove to fishermen that they could rely on the product. Getting a new piece of equipment to be trusted and widely used is never easy in such a big industry and confidence in its reliability is absolutely vital. The trials established that the Hookpod eliminates seabird bycatch yet has no negative impact on the catch rate of target fish species. No seabird has been caught during several thousand Hookpod trials.

The Hookpod team is now working on a research paper, incorporating these test results, which it is intended will be peer-reviewed and published. After that, the focus



413. A Hookpod with the hook clipped up inside showing how the barb is retained and protected (inset), and a Hookpod being deployed with squid bait.

will shift to lobbying governments around the world to include the Hookpod in their range of permitted mitigation measures to reduce seabird bycatch. Most countries where the Hookpod will be used already have protocols to reduce bycatch and in some places these are very effective. They include line weighting, the use of streamer lines, and/or restricting vessels to fishing at night. These form part of the licence conditions that vessels must comply with. Once the Hookpod is on that list of approved measures, it will replace the need for any two or three of the other ones. It is a single, effective measure that, when employed correctly, will prevent seabird bycatch completely.

Hookpods contain a small LED light, which illuminates as the pod opens. This removes the need for fishermen to buy and attach single-use plastic glowsticks (these are attached near the hook to bring in small fish and cause movement in the water, which in turn attracts larger predatory fish), which reduces ocean waste and saves time on the preparation of baited hooks. This light is a key commercial component, as it means that in the long run using a Hookpod will be cheaper for fishermen.

Hookpods will sell for approximately US\$10 each, so an average vessel of 1,200 hooks will have an upfront spend of \$12,000. This will undoubtedly deter some smaller companies. However, when put into the context of running a fishing operation efficiently, the initial costs become less significant. For example, compared with using single-use glowsticks for every single set, fishermen will recoup the initial outlay on Hookpods after just three months of standard operations, and over the course of 12 months they could save an average-sized longline vessel in the region of \$20,000.

There are, however, many fisheries around the world that do not use lights, perhaps as much as half the global longline fleet. One such fishery is the New Zealand tuna and swordfish fleet and it is the New Zealand Government and Department of Conservation which have funded the development and production of a smaller Hookpod, which has no light. Trials of this model began in New Zealand in November 2015.

Although smaller Hookpods clearly do

not have the same cost-saving advantages as the larger pod, we are confident that fishermen will use them once they are approved as an official mitigation measure. It will mean they don't have to use streamer lines, which are unpopular and cause entanglements, and they don't have to use extra line weighting. The smaller Hookpod will also work better for the huge Far Eastern fisheries such as the Japanese tuna fleet. Japan has trialled Hookpods for the last two years and is interested in conducting more tests with the smaller model in spring 2016.

Following the New Zealand trials, it is anticipated that the Hookpod may be used commercially in 2016. The first countries to open discussions will be Australia and New Zealand, both of which have excellent environmental credentials in terms of reducing seabird bycatch, but which also lead the way in working with Regional Fisheries Management Organisations, who control the tuna fleets and are influential across a much wider range.

We hope that by working closely with these countries, awareness of and interest in the Hookpod will spread throughout the ocean-going fleets. It will not be easy to achieve large-scale uptake straight away, but we know that the Hookpod works, we know it stops seabirds being killed and, importantly, we know fishermen like it when they use it. We are very hopeful that 2016 will see the start of Hookpod use in commercial longline fisheries and the beginning of the end of albatrosses dying on hooks.

*David Agombar, Director of Hookpod Ltd,
e-mail info@hookpod.com*



News and comment

Compiled by Adrian Pitches

Opinions expressed in this feature are not necessarily those of *British Birds*

Now African vultures are on the Critical list

The virtual wipeout of Asia's vultures by diclofenac poisoning is a sadly familiar story but the latest BirdLife assessment of Africa's vulture populations shows that another continent could also see its vultures disappear. The updated IUCN Red List of Threatened Species now has no fewer than seven of Africa's 11 vulture species classified as Endangered or Critically Endangered.

Six of them have had their threat status upgraded. They are Hooded Vulture *Necrosyrtes monachus* (CR), White-backed Vulture *Gyps africanus* (CR), Rüppell's Vulture *G. rueppellii* (CR), White-headed Vulture *Trigonoceps occipitalis* (CR), Cape Vulture *G. coprotheres* (EN) and Lappet-faced Vulture *Torgos tracheliotos* (EN). Egyptian Vulture *Neophron percnopterus* was already classified as Endangered.

Of the other four vulture species which occur in Africa, Lammergeier *Gypaetus barbatus* and Eurasian Black Vulture *Aegypius monachus* are Near Threatened; only Griffon Vulture *G. fulvus* (whose main distribution is in southern Europe and Central Asia) and the vegetarian Palm-nut Vulture *Gypohierax angolensis* are still regarded as being of Least Concern, although numbers of Griffons in Africa are also thought to be declining.

That the formerly widespread Hooded and White-backed Vultures should now be classified as Critically Endangered is a repeat of the catastrophic loss of formerly abundant Asian species. But it's not diclofenac that's killing Africa's vultures.

In Africa, it's a mainly threefold threat. Primarily it's the indiscriminate poisoning of vultures – a by-product of people trying deliberately to eradicate mammalian predators of livestock (and in

some areas feral dogs), with the poisoned carcasses or baits inadvertently attracting vultures. Another major issue is the use of vulture body parts in traditional medicine – a recent scientific paper found that 29% of the vulture deaths recorded continent-wide could be attributed to this secretive trade. These practices are thought to be widespread in West Africa, as well as Southern Africa. The third most significant threat to African vultures appears to be the deliberate targeting of the birds by ivory poachers to avoid them giving away the presence of illegally killed carcasses of rhinos and elephants. Between July 2011 and 2014, at least ten such poisoning incidents were discovered, which resulted in the deaths of at least 1,500 vultures across six southern African countries. Other factors thought to play a role in the vulture declines include habitat loss, human disturbance and collisions with wind turbines and electricity pylons.

BirdLife Africa has a ten-year plan to save the continent's vultures – marketing them as 'Nature's clean-up crew' that do a vital waste disposal job and thereby prevent the spread of disease – and has launched a £50,000 fundraising campaign. See <https://kriticalmass.com/p/saving-natures-clean-up-crew>

(Some good news for Asian vultures: Iran has officially banned the export, import, production and veterinary use of diclofenac. And the Indian health ministry has banned multi-dose vials of diclofenac. Veterinary use was banned in 2006 but human formulations of the anti-inflammatory drug (readily available in large vials) have been illegally used to dose cattle; now patients will be able to obtain single doses only.)

Puffin and Turtle Dove added to the Red List

Closer to home, the threat status of many familiar European species has also been upgraded in the 2015 IUCN Red List. Puffin *Fratercula arctica* has been upgraded from Least Concern to Vulnerable and so too has Turtle Dove *Streptopelia turtur*.

Birds of wetlands – waders and wildfowl – are flagged as causing particular conservation concern. Oystercatcher *Haematopus ostralegus*, Northern Lapwing *Vanellus vanellus*, Bar-tailed Godwit *Limosa lapponica*, Red Knot *Calidris canutus*, Curlew Sandpiper *C. ferruginea* and Red-necked Stint *C. ruficollis* have all been upgraded

from Least Concern to Near Threatened. Waders on the East Asian–Australasian flyway are in the greatest peril: Far Eastern Curlew *Numenius madagascariensis* and Great Knot *C. tenuirostris* are now classified as Endangered (formerly they were Vulnerable).

Common Eider *Somateria mollissima* has gone from Least Concern to Near Threatened while Common Pochard *Aythya ferina* has gone from Least Concern to Vulnerable, as has Slavonian Grebe *Podiceps auritus*. There is happier news for Red-breasted Goose *Branta ruficollis* and Velvet

Scoter *Melanitta fusca*, which have been downgraded from Endangered to Vulnerable.

Among the passerines, Redwing *Turdus iliacus* and Meadow Pipit *Anthus pratensis* are upgraded to Near Threatened from Least Concern with climate change a potential threat. See <http://bit.ly/1LIB9zH>

Breeding success for phalaropes

One wetland-bird success story concerns Red-necked Phalaropes *Phalaropus lobatus* in Scotland in 2015, where a pair bred at the Balranald RSPB reserve on North Uist in the Outer Hebrides for the first time in 31 years.

It was an excellent year on Shetland too, where the number of breeding males on Fetlar has risen from six in 2008 to 36 in 2015. Shetland as a whole had 60 breeding males this year – 20 more than the previous record of 40 in 1996. Malcie Smith, RSPB Scotland Species and Habitats Officer for Shetland, said: 'It was so exciting to see that many phalaropes about for their very short summer season. It's very satisfying that our work here is paying off and that birds are now breeding in record numbers.'

A traditional breeding area in Argyll also had its best year on record with six males present; at least three broods were also observed in August. The site, which is the most southerly for breeding Red-necked Phalaropes in the UK, was reoccupied in 2009 but was used by only two males annually until 2014.

Meanwhile, one of the colour-ringed phalaropes that fledged from Fetlar this summer has been reported in southern France. It is only the second-ever ringing return of a phalarope from Shetland. Until

The conservation status of the birds occurring regularly in the UK is set out in detail in the report which fills most of this issue, the 4th instalment in the Birds of Conservation Concern series. The overall themes at a national scale mirror those flagged by the IUCN: seabirds, waterbirds and trans-Saharan migrants are subjects of particular concern.

2013, the wintering location of Shetland's phalaropes was a mystery and it was assumed they went to the Arabian Sea like those that breed in Scandinavia. But in 2012, geolocators were attached to phalaropes in Shetland; and when one logger was retrieved the following year, the data were remarkable: the bird had migrated to the Pacific Ocean and spent the winter in the waters between the Galapagos Islands, mainland Ecuador and Peru. This epic return journey of 16,000 miles had never before been recorded for a European breeding bird. Ten more tags were deployed by RSPB Scotland in 2015 to consolidate these findings.



414. Female Red-necked Phalarope *Phalaropus lobatus*, Fetlar, Shetland, July 2015.

Roger Riddington

Curlews in trouble in Ireland too

The sobering assessment in last month's *BB* paper on the Eurasian Curlew *N. arquata* (*Brit. Birds* 108: 660–668) that it 'should now be considered the UK's highest conservation priority bird species' is borne out by recent survey results in Ireland.

BirdWatch Ireland co-ordinated a Breeding Curlew Survey in the west of Ireland this summer, which recorded just 84 breeding pairs. Although the entire country was not surveyed, the researchers concluded that this is probably the majority of the Irish

breeding population. In the mid 1980s, the population was estimated at 5,000 pairs; so the 2015 figure charts a truly calamitous decline in just 30 years.

Writing in *Wings*, the BirdWatch Ireland magazine, Curlew Project Officer Sean Kelly praised the Irish Government's agriculture department for including a specific measure to encourage Curlew-friendly farming in its agri-environment scheme. Sadly, in the UK such targeted schemes are now virtually non-existent.

Scotland leads the way again

Following the introduction of vicarious liability for wildlife crime in 2011 (where employers and landowners may be held responsible for the actions of their employees, including game-keepers), the Scottish Government has again shown the UK Government the way forward.

The latest move to restrict illegal persecution of raptors is the withdrawal of 'general licences' from four estates in wildlife-crime black spots in Stirlingshire and the Borders by Scottish Natural Heritage. The decision was made on the basis of evidence of wildlife crime provided by Police Scotland. General licences allow landowners or land managers to carry out actions which would otherwise be illegal, including controlling 'pest species' to protect crops or livestock.

The SNH Restrictions Orders mean that, for the three years up to 30th November 2018, the

killing or taking of three gull species, six crow species and three pigeons/doves will not be allowed by the offending estates. In addition, the use of the following practices used to kill or take these species will not be allowed: pricking or oiling of eggs, the destruction of eggs and nests, the use of Larsen, Larsen Mate and Larsen Pod traps, the use of crow cage traps, shooting with any firearm and targeted falconry.

Nick Halfhide, SNH Director of Operations, said: 'There is clear evidence that wildlife crimes have been committed on these properties. Because of this, and the risk of more wildlife crimes taking place, we have suspended the general licences on these four properties for three years. They may still apply for individual licences, but these will be closely monitored.' Unsurprisingly, RSPB Scotland has warmly welcomed the SNH initiative.

Short-eared Owls found shot

This is another grim tale from the bird-crime black spot that is northern England. Durham Police and the RSPB are appealing for information following the shooting of two Short-eared Owls *Asio flammeus*. The birds had been pushed into a pothole near Selset Reservoir in Co. Durham and were found by a member of the public in March; it has now been confirmed that both birds had been shot.

It seems that the shooting fraternity, ever eager to protect 'their' grouse, are now getting protective about 'their' vole populations too. PC Garry Dunn, based in Barnard Castle, said: 'Whoever is respon-

sible for shooting this pair of Short-eared Owls has committed a criminal offence. Short-eared Owls are protected by law and therefore the RSPB, in conjunction with the police, will investigate such reports in a robust fashion with the intention of bringing those responsible to justice.'

RSPB Investigations Officer Alan Firth said: 'This is a disgraceful act. There are concerns about the breeding population of this species, and there is evidence that they are subject to persecution. Given their primary prey are small mammals, it is difficult to understand why.'

Ring Ouzels stolen from the wild

Staying on the Durham moors, there is a bizarre case of Ring Ouzel *Turdus torquatus* chicks being stolen from the wild and 'laundered' as captive-bred birds.

The tale begins in 2012 when a licensed ringer monitoring Ring Ouzel nests at Stanhope Moor was surprised to discover that three chicks in a nest had been 'close ringed' with rings used for aviary-bred birds. He reported this information to the RSPB Investigations Unit, who suspected that someone was ringing wild chicks in the nest in an attempt to pass them off (illegally) as captive-bred birds. A short time later, the ringer returned to the nest on the moor to discover that the chicks had vanished.

Two years later, in July 2014, the home of a Wear-side bird keeper was raided by Northumbria Police, assisted by the RSPB and RSPCA. They discovered five Ring Ouzels in aviaries in his garden. In October this year, Bobby Thompson, from Houghton-le-Spring,

pleaded guilty at Sunderland Magistrates' Court to four charges of illegally taking Ring Ouzels from the wild, contrary to the 1981 Wildlife and Countryside Act. He was given a 12-month conditional discharge and ordered to forfeit his diaries and maps. He was also ordered to pay £165 costs.

The diaries seized by the police linked Thompson to Ring Ouzel nests on Stanhope Moor in 2012 and 2013. Although the three original birds were never found, some of the Ring Ouzels discovered at Thompson's property were wearing close rings with serial numbers in the same sequence as those that had disappeared from the Stanhope Moor nest in 2012.

The story has a happy ending: Mark Thomas of RSPB Investigations released the seized Ring Ouzels at Dungeness in autumn 2014 so that they could join other birds heading south.

Birdquesters track down Holy Grail of African birding

A Birdquest tour group, led by Mark Van Beirs and Mark Beaman to a remote reserve in the Congolese jungle, have become the only birders (after South African Callan Cohen) to see the Congo Peafowl *Afropavo congensis* in the wild. Mark Beaman told N&C: 'Thanks to some great tracking by Mark Van Beirs, we all saw a female at roost. How he found this ultra-elusive, ultra-shy bird amongst the billion trees in the Lomako-Yokokala Faunal Preserve I will never know!'

Congo Peafowl is an enigma. The only true pheasant found in Africa, it was described in 1936 by American explorer-naturalist James Chapin from specimens obtained from hunters in the Congo. He never saw the bird in the wild himself.

Much of the Democratic Republic of Congo remains off limits because of the security situation in the east of the country but the Birdquest group, assisted by the African Wildlife Foundation, visited a remote forest reserve in Equatorial Province. This necessitated a 700-km charter flight from the DRC capital Kinshasa followed by one-and-a-half days travelling

upriver in a motorised dugout canoe before a 12-km hike to the ranger camp in the Lomako-Yokokala reserve.

The eight members of the group who made the trip in September became the 2nd–9th birders to see Congo Peafowl in the wild. Mark Beaman added: 'We spent 13 days there and most of us saw just that female which MVB, rather amazingly, tracked down as it called from a roost site in this vast forest. In addition, one participant flushed a male on another occasion.'

If you fancy becoming the 10th birder to set eyes on this 'grail bird', Birdquest is returning to the Congo in September 2017. See www.birdquest-tours.com



415. Female Congo Peafowl *Afropavo congensis*, Democratic Republic of Congo, September 2015.

Mark Beaman/Birdquest

Festive offerings from British Birds

As you draw up that Christmas list for family, friends – and yourself! – don't forget that *BB* can help you with some desirable presents. How about a gift subscription? You can easily buy one on our website www.britishbirds.co.uk – just click on the arrow on the photo of those tightly packed Knots on the site's front page. And for all your Christmas books, click on the arrow on the Nightjar photo to take you to the *BB* Bookshop operated by our bookseller WildSounds. There's discount on many titles for *BB* subscribers if you quote the code in

the Bookshop advert at the back of this issue. Crucially, all books sold to *BB* subscribers generate income for the journal itself. And while you're on the *BB* website, why not consider downloading a digital version of the journal to read on your tablet or smartphone? You can buy individual issues or take out an annual subscription. And if you don't wish to lose your hard copies, you can have a joint print/digital subscription. Happy Christmas and good birding in 2016.

For extended versions of many of the stories featured here, and much more, visit our website www.britishbirds.co.uk

Birds of Conservation Concern 4: the population status of birds in the UK, Channel Islands and Isle of Man

Mark Eaton, Nicholas Aebischer, Andy Brown,
Richard Hearn, Leigh Lock, Andy Musgrove,
David Noble, David Stroud and Richard Gregory

Rosemary Powell



Recent survey data have resulted in the Dotterel *Charadrius morinellus* being one of five upland breeding species that moved from Amber to Red in BoCC4.

Abstract This is the fourth review of the status of birds in the UK, Channel Islands and Isle of Man. Using standardised criteria, 244 species were assessed and assigned to the Red, Amber or Green list of conservation concern. The assessment criteria include conservation status at global and European levels and, within the UK, historical decline, trends in population and range, rarity, localised distribution and international importance. The findings are alarming, with 20 species moving on to the Red list and only three leaving it. Three formerly regular breeding species are considered to have ceased breeding in the UK (Temminck's Stint *Calidris temminckii*, Wryneck *Jynx torquilla* and European Serin *Serinus serinus*).

Some 67 (27.5%) of the UK's regularly occurring bird species are now on the Red list. As well as reinforcing existing conservation concerns, such as for birds of woodland and lowland farmland and for long-distance migrants, this assessment should heighten concern for other groups. Five upland species, including Eurasian Curlew *Numenius arquata* and Dotterel *Charadrius morinellus*, have moved to the Red list. Declines in the UK's internationally important breeding seabird populations are emphasised here by the Red-listing of Shag *Phalacrocorax aristotelis*, Kittiwake *Rissa tridactyla* and Puffin *Fratercula arctica*. Yet the effect of well-targeted conservation action is demonstrated by the recovery of Eurasian Bittern *Botaurus stellaris* and European Nightjar *Caprimulgus europaeus*, with both moving from Red to Amber.

Introduction

This paper presents the fourth 'Birds of Conservation Concern' (BoCC) assessment for birds in the UK. Using a well-established approach, based on quantitative assessments against standardised criteria, birds are placed on 'Red', 'Amber' or 'Green' lists to indicate the level of conservation concern we have for them. By using a transparent and standardised approach, based upon the best available data, and conducted by a multi-partner group drawn from relevant organisations in both statutory and non-governmental sectors, this is a robust assessment of the status of all the bird species considered an established part of the UK's avifauna. These lists report on the fortunes of individual species but also indicate broader changes in the UK's biodiversity.

In the last assessment (BoCC3, Eaton *et al.* 2009), we stated that 'current pressures on the global environment are unprecedented, with widespread and severe threats to habitats and the species within them', and that funds for conservation action 'are limited, and often the first to be lost in times of economic downturn'. Since then, the pressures on nature on a global scale have increased (Hoekstra & Wiedmann 2014), and the UK has suffered a lengthy and severe economic recession. And, as expected, funding for nature conservation has fallen: public sector spending on biodiversity in the UK has decreased substantially from a recent peak in 2008/09, both in real terms and as a proportion of GDP (Defra 2014). As a consequence of a continuing decline in nature (e.g. Burns *et al.* 2013, Defra 2014), increasing pressures, and decreased resources to tackle these

pressures, the need for effective use of those resources has never been greater. The first step to ensure effective use of resources is to prioritise, and exercises such as BoCC are essential in this regard, helping us to identify the species (and through further analysis, the countries and regions, habitats, and conservation issues) that most urgently require remedial action.

The red-listing of birds in the UK stretches back over a quarter of a century, with the first formal assessment being that of Batten *et al.* (1990), who listed 117 species in their *Red Data Book*. 'Birds of Conservation Concern' first appeared later that decade, with Gibbons *et al.* (1996b) publishing the first 'traffic light system' of Red, Amber and Green lists. The two subsequent reviews, BoCC2 (Gregory *et al.* 2002) and BoCC3 (Eaton *et al.* 2009), have sought to employ the same approach, although there have been some changes in methodology to reflect growing experience and changes in data availability. Key headlines identified during these BoCC assessments were:

- BoCC1 (1996): 36 species were placed on the first BoCC Red list, which was instrumental in raising the profile of the severe declines in widespread farmland birds such as Skylark *Alauda arvensis* and Corn Bunting *Emberiza calandra*, part of probably the greatest loss of UK biodiversity in the twentieth century (Aebischer *et al.* 2000).
- BoCC2 (2002): the Red list rose to 40 species, with the addition of a number of woodland birds such as Lesser Spotted Woodpecker *Dendrocopos minor* and Willow Tit *Poecile montana* illustrating the

bird declines in this habitat (Fuller *et al.* 2005). The continuing recovery of raptors such as Red Kite *Milvus milvus*, Osprey *Pandion haliaetus* and Marsh Harrier *Circus aeruginosus* from historical persecution saw them move from Red to Amber.

- *BoCC3* (2009): a more substantial growth in the Red list saw it expanded to 52 species. The additions to the Red list included more woodland species, such as Hawfinch *Coccothraustes coccothraustes* and Wood Warbler *Phylloscopus sibilatrix*, but for the first time the plight of Afro-Palearctic migrants, such as Common Cuckoo *Cuculus canorus*, rose to the fore, with particular concern for species that winter in the humid tropics (e.g. Vickery *et al.* 2014). Climate change may have contributed to such declines, as it may also have done in the decline of six newly Red-listed northern species (e.g. Whimbrel *Numenius phaeopus* and Redwing *Turdus iliacus*), for which the UK lies at the southern or western edge of the breeding range. Some comfort could be gained from the fact that targeted conservation action for Stone-curlew *Burhinus oedicephalus* and Woodlark *Lullula arborea* resulted in those two species moving from Red to Amber. Notably, *BoCC3* conducted the first subspecies-level *BoCC* assessment, enabling different levels of concern

to be applied to different races of the same species (such as Black-tailed Godwits *Limosa limosa* of the nominate race and *L. l. islandica*), and the threats facing some of the UK's endemic races to be identified.

This latest report comes six years after *BoCC3*. The six-year gap fits into an emerging cycle of reporting on the status of the UK's birds, influenced by the requirements of the EU's Wild Birds Directive (79/409/EEC). This dictates that all EU Member States report on the status (e.g. trends, ranges and populations) of all native bird species at six-year intervals. This was most recently done in 2013. The collation of similar data from across the EU, combined with parallel submissions from BirdLife International partners in non-EU countries, enables Europe-wide reporting (European Commission 2015) and the production of an updated European Red List of Birds (ERLOB; BirdLife International 2015) at regular intervals. Through this schedule, a number of the 'building blocks' of *BoCC* assessments are put in place: updated Global and European Red List assessments, and new population estimates through the work of the Avian Population Estimates Panel (APEP; see Musgrove *et al.* 2013), which help us to assess species against criteria for rarity and international importance (see below), the latter helped by the availability of the European dataset compiled for ERLOB.



Edmund Fellowes/BTO

416. The Grey Wagtail *Motacilla cinerea* is one of five upland species moving from Amber to Red in *BoCC4*, a move that highlights concern about species of our upland streams and rivers.

Methods

The species list

As in previous assessments, we considered all naturally occurring native species on the British List (BOU 2013; see also www.bou.org.uk), but with filters to exclude some species from the full assessment: vagrants, defined as species considered by BBRC (www.bbrc.org.uk), and species occurring only as scarce migrants (e.g. White & Kehoe 2015a,b). As before, we have also included Globally Threatened species (BirdLife International 2015) that have occurred in the UK in each of the last 25 years (Balearic Shearwater *Puffinus mauretanicus* and Aquatic Warbler *Acrocephalus paludicola*), regardless of scarcity in the UK.

A number of non-native species are well established in the UK but, despite the fact that some are appreciated by birdwatchers and the public, we do not consider these species to have conservation value in the UK and they are excluded from this assessment.

As in *BoCC3*, rarer breeding species were considered only if they had been proven (or strongly suspected) to breed for five consecutive years within the most recent 25 years for which data are available. This excluded a number of species, such as European Bee-eater *Merops apiaster*, which remain occasional breeders in the UK, and others that may well be in the process of establishing (e.g. Great White Egret *Ardea alba* and Little Bittern *Ixobrychus minutus*). Species considered to be regular breeders in *BoCC3* were excluded from consideration (and placed on the list of 'former breeders') if they had not bred in any of the five most recent years for which data are available.

Note that some species were excluded from assessment as breeding species, but were assessed because they have larger or better-established non-breeding populations (e.g. Red-necked Grebe *Podiceps grisegena* and Black Tern *Chlidonias niger*).

One species was added to our list: Caspian Gull *Larus cachinnans* was assessed for the first time since its acceptance as a full species in 2007 (BOU 2008). Since the last review it has become apparent that the Caspian Gull is a regular non-breeding visitor to the UK.

The assessment process

BoCC assessments use a set of quantitative criteria that fall into two groups, for the Red and the Amber lists. All species are assessed against all of these criteria, and are placed on the highest priority list for which they qualify. If they meet none of these criteria, they are placed on the Green list.

The criteria used for *BoCC4* were largely those used for *BoCC3*, which in turn had evolved from previous *BoCC* assessments. The clear advantage to maintaining a consistent approach to assessments over time is that it allows a direct comparison of the results of those assessments. A few minor adjustments were necessary, to allow for changing circumstances and data availability, and these are outlined below. All the *BoCC* criteria are summarised briefly, but Eaton *et al.* (2009) contained further details, while a fuller account of the criteria and data used is available in the Supplementary Online Material at www.britishbirds.co.uk/wp-content/uploads/2014/07/SM.pdf. The adjustments arose because we felt that the criteria used for assessing recovery (and any lapse in that recovery) from historical decline could be improved; because of changes forced upon us by the availability of information on European status; and because of the availability of new atlas data for assessing non-breeding range change. Our adjustments and the reasoning behind them are discussed below, and the impacts of these changes are analysed in the Results section.

Red-list criteria

IUCN: Global conservation status. Species that are Globally Threatened (Critically Endangered, Endangered and Vulnerable, but not Near Threatened) under IUCN guidelines, as assessed by BirdLife International, the IUCN Red List Authority for birds, in 2015 (www.iucnredlist.org).

HD: Historical decline in breeding populations. Species judged to have declined severely between 1800 and 1995, from an assessment conducted by Gibbons *et al.* (1996a), and which have not recovered subsequently. The process by which species should be deemed to have shown partial recovery from historical decline (hence move



417. One of the headline birds of this current *BoCC* review is the Eurasian Curlew *Numenius arquata*, which moved from Amber to Red. A recent paper in *BB* called this species the most important bird conservation priority in the UK (Brown et al. 2015).

to the Amber list), or complete recovery (move to the Green list), or subsequently faltered from those recoveries, was a subject of much debate. We agreed that the initial assessments of historical decline by Gibbons *et al.*, based on a semi-quantitative scoring of population changes within five periods, were robust; and that it was still appropriate that any HD species doubling its population size or more within the relevant 25-year period, and exceeding 100 breeding pairs, should move to the Amber list (provided it did not qualify as Red under other criteria). We made one change to this step to be consistent with other criteria, and introduced an assessment of trend over the longer-term period, defined as the entire period used for assessments since the first *BoCC* review, starting in 1969.

A key concern, however, was how to treat changes subsequent to a move to Amber (HDrec), namely how any future recovery or decline should be regarded. The criterion used for *BoCC3* stipulated that a decline of 20% between *BoCC* reviews should dictate that a species returns to the Red list, whereas a further increase of 20% over a similar period would enable a species to move to the

Green list (unless it qualified as Amber under any other criteria). We felt that this was a rather unsatisfactory approach, in that in both cases the criterion used a non-standard measurement period unrelated to those used for other *BoCC* criteria, and which could lead to changes in status due to relatively insubstantial and short-term fluctuations in population size.

Therefore, for *BoCC4* we have used the following rationale: a species should be moved to the Green list (if not qualifying against other Red or Amber criteria) if it shows continued and substantial recovery from historical decline beyond the level (HDrec) that qualified the species for the Amber list. When it moves to Green, the species should be considered as having recovered permanently and would no longer be considered against the historical decline criterion, i.e. any subsequent decline would be assessed only against the relevant decline criteria such as BDp (see below). That being the case, we felt that at least another doubling of numbers should be required to permit movement to the Green list. In fact, we now require a species to have shown a further

increase of at least 167% from its HDrec level in order to move to the Green list. This higher threshold ensures that if a species subsequently declines by anything less than 25% (thus does not trigger a return to the Amber list under the moderate decline criterion), it will still remain at more than double its HDrec numbers.

As an example, imagine a hypothetical species that qualified for the *BoCC1* Red list under the historical decline criterion, but no others. This species increased from 100 to 300 pairs within 25 years (well over the doubling to 200 required) and thus was moved from Red to Amber in *BoCC2*. If, by the time of this current review, it had increased to 900 pairs (an increase of 200% from its HDrec level of 300 pairs and thus above the 167% threshold of 801 pairs), it would be moved to the Green list and the HD criterion would no longer apply. If it had failed to increase by this rate, but remained above 200 pairs, it would stay on the Amber list. Finally, if it had declined to below 200 pairs, it would return to the Red list. In the last two cases, the HD criterion would still play a role in future assessments.

BDp: Breeding population decline. Severe decline in the UK breeding population size (>50%) over 25 years (**BDp¹**) or the longer-term (**BDp²**), defined as the entire period used for assessments since the first *BoCC* review, starting in 1969.

WDp: Non-breeding population decline. Severe decline in the UK non-breeding population size (>50%) over 25 years (**WDp¹**) or the longer-term (**WDp²**) as defined above. Non-breeding trends were assessed only if a species has substantially independent breeding and non-breeding populations, otherwise only the breeding population was assessed. The same was true for other criteria which could be applied to both breeding and non-breeding populations.

BDr: Breeding range decline. Severe decline in UK range (>50%) between the breeding bird atlases in 1988–91 and 2007–11 (**BDr¹**) or 1968–71 and 2007–11 (**BDr²**), as measured by the calculated change in the number of occupied 10-km squares.

WDr: Non-breeding range decline. Severe decline in UK range (>50%) between the wintering bird atlases in 1981–84 and 2007–11 (**WDr¹**), as measured by the calculated change in the number of occupied 10-km squares. Since there are only two wintering bird atlases, it was not possible to measure range change over a longer time period. Note that while *BoCC* reviews have always intended to assess range change in the non-breeding season, this is the first assessment able to do so.

Amber-list criteria

ERLOB: European Red List status. Previous *BoCC* assessments have used Species of European Conservation Concern assessments (SPECs; see Tucker & Heath 1994 and BirdLife International 2004) as an indication of wider regional concern for a species, and thus Amber-listed any UK species that was SPEC-listed. Although a new assessment of species status across Europe, the European Red List of Birds (ERLOB; BirdLife International 2015), was published in 2015, this produced only IUCN Red List assessments of regional extinction risk (IUCN 2012) with no consideration of the wider suite of measures (species rarity, localisation, moderate decline and depletion) included in SPEC assessments. At present, it is not clear when or if new SPECs will be published. Therefore, to complete the *BoCC* assessment, we faced a quandary: to delay publication of *BoCC* in the hope that SPEC assessments would be completed or to drop the use of SPECs as part of *BoCC*. We chose the latter option, and thus have Amber-listed any species on the European Red List (Critically Endangered, Endangered or Vulnerable). We recognise that the exclusion of species that were previously SPEC-listed has had an impact on our final lists, by moving species from Amber to Green – and we investigate the scale of this impact below – but we feel that our decision provides a sound basis for this and future *BoCC* assessments.

HDrec: Historical decline – recovery. As described above, previously Red-listed for historical decline, followed by an increase of at least 100% over 25 years or the longer-term period. This also applies if the move to

HDrec happened in a previous *BoCC* assessment, having remained above the 100% increase threshold, but not having recovered further to move to Green (see text under historical decline above).

BDMp: Breeding population decline. As for Red-list criterion BDp, but with moderate decline (>25% but <50%) over 25 years (BDMp¹) or the longer-term period (BDMp²).

WDMp: Non-breeding population decline. As for Red-list criterion WDp, but with moderate decline (>25% but <50%) over 25 years (WDMp¹) or the longer-term period (WDMp²).

BDMr: Breeding range decline. As for Red-list criterion BDr, but with moderate decline (>25% but <50%) between 1988–91 and 2007–11 (BDMr¹) or 1968–71 and 2007–11 (BDMr²).

WDMr: Non-breeding range decline. As for Red-list criterion WDr, but with moderate decline (>25% but <50%) between 1981–84 and 2007–11 (WDMr¹).

BR & WR: Breeding and non-breeding rarity. Species qualified as rare breeders (BR) if the UK breeding population was <300 pairs, and as rare non-breeders (WR) if the UK non-breeding population was <900 individuals.

BL & WL: Breeding and non-breeding localisation. Species were considered localised if more than 50% of the UK population was found at ten or fewer sites in either the breeding (BL) or the non-breeding (WL) season. Sites were defined as either Special Protection Areas (SPAs; Stroud *et al.* 2001) or Important Bird Areas (IBAs; Heath & Evans 2000). Rare breeders or rare non-breeders (see above) were not assessed against this criterion, as their small population sizes predispose them to be restricted to a small number of sites.

BI & WI: Breeding and non-breeding international importance. Species were considered of international importance if the UK holds at least 20% of the European population in either the breeding (BI) or the non-breeding

(WI) season. European estimates were derived from data collated as part of the ERLOB assessment, but for non-breeding waterbirds we used estimates for the flyway populations for northwest Europe (wildfowl) or East Atlantic (waders) (Wetlands International 2015).

Data sources

We are fortunate in that, thanks to the efforts of thousands of dedicated volunteer bird-watchers working in tandem with professional research and conservation organisations, birds in the UK are one of the best-monitored taxonomic groups anywhere in the world. We are thus well equipped to make status assessments such as *BoCC*, and for many species can make robust assessments against all the *BoCC* criteria. This is not true for all species, however, and it is highly likely that some data gaps have influenced our assessment. The principal sources of data were as for *BoCC3*, and our treatment of data from these sources was as described in Eaton *et al.* (2009). Further details can be found at www.britishbirds.co.uk/wp-content/uploads/2014/07/SM.pdf

In summary, the main sources for measuring population trends were:

- The *BTO/JNCC Common Birds Census (CBC)* and *BTO/JNCC/RSPB Breeding Bird Survey (BBS)*; when combined, these gave us trends for common and widespread breeding birds from the late 1960s onwards. For some species, such as Common Swift *Apus apus* and Wood Warbler, trends were available only from the start of the BBS in 1994. Details of the BBS and the latest results can be found in Harris *et al.* (2015) and at www.bto.org/volunteer-surveys/bbs
- *BTO/JNCC/RSPB Wetland Bird Survey (WeBS)* and *WWT/JNCC/SNH Goose and Swan Monitoring Programme*, which together provided annual trends for most wildfowl species from 1966/67 onwards and for waders from 1974/75 onwards, with a few other waterbird species monitored over shorter periods. See Holt *et al.* (2015) and www.bto.org/volunteer-surveys/webs and <http://monitoring.wwt.org.uk/our-work/goose-swan-monitoring-programme>

- Seabird monitoring comes from two sources: the three complete censuses conducted in 1969–70 (Cramp *et al.* 1974), 1985–88 (Lloyd *et al.* 1991) and 1998–2001 (Mitchell *et al.* 2004), and the Seabird Monitoring Programme that has monitored a UK-wide sample of colonies since 1986. See www.jncc.defra.gov.uk/page-1550
- Rare Breeding Birds Panel data provided trends since 1973 for rare breeders (defined, loosely, as species with UK populations of less than 2,000 pairs, although data collation for less rare species began more recently than 1973). We used data up to 2012 (Holling *et al.* 2014) to create long-term and 25-year trends, sometimes in combination with estimates from single-species surveys. See www.rbbp.org.uk
- Periodic species surveys run under the Statutory Conservation Agency and RSPB Annual Breeding Birds Scheme (SCARABBS) programme, BTO species surveys and the GWCT/BTO Woodcock survey provided trends and population figures for a number of scarce and rare species.

With occasional exceptions (see the Supplementary Online Material for details), trends were calculated using data up to and including 2012. In the case of BBS/CBC and BBS trends, these were smoothed trends, using data from 2013 but changes reported up to 2012 following standard statistical practice.

For measuring trends in range we relied on the three breeding bird atlases (Sharrock 1976, Gibbons *et al.* 1993 and Balmer *et al.* 2013) and two wintering bird atlases (Lack 1986 and Balmer *et al.* 2013). Given the 20-year gaps between breeding atlases, some BoCC assessments (e.g. BoCC3) have been forced to rely on rather out-of-date measures of change in range. The recent *Bird Atlas 2007–11* allowed us to generate up-to-date measures of change in breeding range over both the long-term (between the first and third atlases, a period of 40 years) and a 20-year period (between the second and third atlases, approximating to the 25-year trend period). In addition, we were able for the first time to calculate (near) 25-year trends in non-breeding range, based on the two winter atlases with fieldwork periods covering 1981/82 to 1984/85 and 2007/08 to 2010/11.



Andy Hay/RSPB-images

418. Three breeding seabirds moved from Amber to Red in BoCC4, with both Shag *Phalacrocorax aristotelis* (illustrated) and Kittiwake *Rissa tridactyla* doing so because of continuing serious declines in the UK breeding populations.

Population estimates were derived from a range of sources and almost all are as reported by APEP (see Musgrove *et al.* 2013). To maintain consistency with the data used for UK reporting under the Wild Birds Directive, we did not update these estimates to account for any additional data available since their publication, except for species for which the results from new national surveys were available (e.g. Dotterel *Charadrius morinellus*; Hayhow *et al.* 2015). Localisation estimates were derived using these UK estimates and data collated in the third review of the UK's network of SPAs (Stroud *et al.* in prep.). There has been no update of the population estimates within IBAs since the BoCC3 review; since these form an important complementary approach to assessing localisation within SPAs, we simply reused the existing BoCC3 assessments for IBAs.

Race-level assessments

As with BoCC3, we conducted a parallel assessment of the BoCC status of regularly occurring races of birds. With the exception of the changes in criteria (HD and ERLOB) described above and applied similarly to races, the process was as described in Eaton *et al.* (2009). As before, the lack of some data sources at a race level (e.g. Global and European IUCN assessments, and monitoring data at the race level) required us to create new estimates of populations, trends and status outside of the UK as best we could with existing data sources.

We note that over the last six years little has changed to clarify further the status of some of the UK's less well-known races. We used as our starting point the same list of races compiled for BoCC3, based primarily on the list of races maintained by the BOU but informed by other key references; as before,

our inclusion of a race in this review does not constitute a judgement on its validity. There were, however, some relevant taxonomic changes, most arising from investigations at the species level leading to changes in what is considered a valid race. Four races were no longer considered: Pintail *Anas acuta* and Sandwich Tern *Sterna sandvicensis* are now considered monotypic following the split of other races into separate species (Southern Pintail *A. eatoni* and Cabot's Tern *S. acuflavida*, respectively), Red Kite is effectively monotypic following the extinction of the Cape Verde Kite *M. m. fasciicauda* (Johnson *et al.* 2005), and the occurrence of the Marsh Tit race *Poecile p. palustris* in the UK was dismissed by Broughton (2009). We considered three additional races: Greater Scaup *Aythya m. marila*, European Storm-petrel *Hydrobates p. pelagicus* and Slavonian Grebe *Podiceps a. auritus*, as a consequence of these species being recognised as polytypic since our last assessment (del Hoyo & Collar 2014).

Results
BoCC4 species-level assessment

Three species were identified as not having bred in the UK in the last five years for which data were available; they were thus removed from the assessment and are now considered to be 'former breeders': Temminck's Stint *Calidris temminckii*, Wryneck *Jynx torquilla* and European Serin *Serinus serinus* (table 1). The addition of Caspian Gull meant that in total 244 species were assessed. Of these 244 species, BoCC4 placed 67 (27.5%) on the Red list, 96 (39.3%) on the Amber list, and 81 (33.2%) on the Green list. Lists of species, qualifying criteria and values are given in tables 2–4.

There has been a substantial change in the way species are distributed among the three

Table 1. Formerly regular breeding species in the UK.

	year of last recorded breeding
Great Bustard <i>Otis tarda</i>	c. 1833
Kentish Plover <i>Charadrius alexandrinus</i>	1979
Temminck's Stint <i>Calidris temminckii</i>	1993
Black Tern <i>Chlidonias niger</i>	1975
Great Auk <i>Pinguinus impennis</i>	c. 1812
Snowy Owl <i>Bubo scandiacus</i>	1975
Wryneck <i>Jynx torquilla</i>	2002
European Serin <i>Serinus serinus</i>	2006

Table 2. Species on the BoCC4 Red list, the criteria under which they qualify, and values for those criteria. Red^b and Amber^c criteria

	BoCC4	IUCN	HD	BDP1 & BDM1	BDP2 & BDM2	WDP1 & WDM1	WDP2 & WDM2	BDP1 & BDM1	BDP2 & BDM2	WDP1 & WDM1	WDP2 & WDM2	BR	WR	BL	WL	BI	WI
White-fronted Goose <i>Anser albifrons</i>	G																
Common Pochard <i>Aythya ferina</i>	A	VU															
Greater Scaup <i>Aythya marila</i>	R																
Long-tailed Duck <i>Clangula hyemalis</i>	G	VU													90–100 ^{IJA}		
Common Scoter <i>Melanitta nigra</i>	R																
Velvet Scoter <i>Melanitta fusca</i>	A	VU													90–100 ^{Both}		
Black Grouse <i>Tetrao tetrix</i>	R		*												90–100 ^{IJA}		
Capercaillie <i>Tetrao urogallus</i>	R																
Grey Partridge <i>Perdix perdix</i>	R																
Balearic Shearwater <i>Puffinus mauretanicus</i>	R	CR															
Shag <i>Phalacrocorax aristotelis</i>	A															50–60	
Red-necked Grebe <i>Podiceps grisegena</i>	A																
Slavonian Grebe <i>Podiceps auritus</i>	A	VU															
White-tailed Eagle <i>Haliaeetus albicilla</i>	R		*														
Hen Harrier <i>Circus cyaneus</i>	R		*														
Corn Crake <i>Crex crex</i>	R																
Northern Lapwing <i>Vanellus vanellus</i>	R																
Ringed Plover <i>Charadrius hiaticula</i>	A																
Dotterel <i>Charadrius morinellus</i>	A														70–80 ^{Both}		50–60
Whimbrel <i>Numenius phaeopus</i>	R																
Eurasian Curlew <i>Numenius arquata</i>	A																
Black-tailed Godwit <i>Limosa limosa</i>	R		*														
Ruff <i>Calidris pugnax</i>	R																
Red-necked Phalarope <i>Phalaropus lobatus</i>	R		*														
Woodcock <i>Scolopax rusticola</i>	A																
Arctic Skua <i>Stercorarius parasiticus</i>	R																
Puffin <i>Fratercula arctica</i>	A	VU															
Roseate Tern <i>Sterna dougallii</i>	R																

Table 2. Species on the BoCC4 Red list, the criteria under which they qualify, and values for those criteria. Red^b and Amber^c criteria (cont.)

	BoCC _{3a}	IUCN	HD	BDP ₁ & BDM _{P1}	BDP ₂ & BDM _{P2}	WDP ₁ & WDM _{P1}	WDP ₂ & WDM _{P2}	BDP ₁ & BDM _{P1}	BDP ₂ & BDM _{P2}	WDP ₁ & WDM _{P1}	ERLOB	HDacc	BK	VYR	RI	WI	RI	WI	20–30
Kittiwake	A			-74	-62	-60	-53 to -60	35	-51		VU								
Herring Gull	R			-92	-96														
Turtle Dove	R	VU		-60	-62			30	37										
Common Cuckoo	R			-81	-81														
Lesser Spotted Woodpecker	R																		
<i>Dendrocopos minor</i>																			
Merlin	A		*																
Falco columbarius																			
Golden Oriole	R			-81	-70			40					2–5						
Red-backed Shrike	R		*	-66	-93				-88				1–3						
Lanius collurio	R			-91	-94			19	-54										
Willow Tit	R			13	-72														
Poecile montana	R			32	-62			37	34										
Poecile palustris	R			-66	-93														
Skylark	R			-68	-66			30					1–3						
Alauda arvensis	R			-74	-66														
Phylloscopus sibilatrix	R			-77	-88														
Warbler Locustella naevia	R			-70	-83														
Warbler Locustella luscinioides	R			-72	-63			-77					2–8						
Acrocephalus paludicola	R			-50	-59														
Acrocephalus palustris	R			-73	-62														
Starling Sturnus vulgaris	R			-80	-88														
Turdus torquatus	R			-72	-63			-77											
Turdus pilaris	R			-50	-59														
Turdus philomelos	R			-73	-62														
Turdus iliacus	R			-81	-62														
Turdus viscivorus	A			-80	-88														
Muscicapa striata	R			-60	-85														
Nightingale Luscinia megarhynchos	A			-53	-43														
Ficedula hypoleuca	A			-52	-43														
Phoenicurus ochruros	A			-55	-43														
Saxicola rubetra	A																		

Table 2. Species on the BoCC4 Red list, the criteria under which they qualify, and values for those criteria. Red^b and Amber^c criteria (cont.)

	BoCC3 ^a	IUCN	HD	BDP ¹ & BDM ¹	BDP ² & BDM ²	WDp ¹ & WDM ¹	WDp ² & WDM ²	BDp ¹ & BDM ¹	BDp ² & BDM ²	WDp ¹ & WDM ¹	ERLOB	HDrec	BR	WR	BL	WL	BI	WI
House Sparrow <i>Passer domesticus</i>	R			-32	-66													
Tree Sparrow <i>Passer montanus</i>	R			-63	-90													
Yellow Wagtail <i>Motacilla flava</i>	R			-33	-57			-25	-32									
Grey Wagtail <i>Motacilla cinerea</i>	A			-64	-70													
Tree Pipit <i>Anthus trivialis</i>	R			-74				-64	-75									
Hawfinch <i>Coccothraustes coccolthraustes</i>	R																	
Linnet <i>Linaria cannabina</i>	R				-60													
Twite <i>Linaria flavirostris</i>	R	*		-52														
Lesser Redpoll <i>Acanthis cabaret</i>	R			-64	-83													
Yellowhammer <i>Emberiza citrinella</i>	R			-49	-54													
Chil Bunting <i>Emberiza cirillus</i>	R																	
Corn Bunting <i>Emberiza calandra</i>	R		*	-61	-90			-35	-56	-27								

^a BoCC3 assessments: R = Red, A = Amber, G = Green^b Red-list criteria:

IUCN: Globally Threatened (CR = Critically Endangered, EN = Endangered, VU = Vulnerable), HD: historical decline in the breeding population, BDp^{1/2}: severe breeding population decline over 25 years/longer term, WDP^{1/2}: severe non-breeding population decline over 25 years/longer term, BDP^{1/2}: severe breeding range decline over 25 years/longer term, WDR¹: severe non-breeding range decline over 25 years.

^c Amber-list criteria:

ERLOB: Threatened in Europe (CR = Critically Endangered, EN = Endangered, VU = Vulnerable), HDrec: historical decline – recovery, BDMp^{1/2}: moderate breeding population decline over 25 years/longer term, WDMp^{1/2}: moderate non-breeding population decline over 25 years/longer term, BDMr^{1/2}: moderate breeding range decline over 25 years/longer term, WDMr¹: moderate non-breeding range decline over 25 years, BR/WR: breeding/non-breeding rarity, BL/WL: breeding/non-breeding localisation. Superscript text indicates whether species qualified as localised in IBAs, SPAs, or both. BI/WI: breeding/non-breeding international importance. Figures are given in bands for species exceeding the qualifying thresholds for the localisation and international importance criteria.

Red and Amber criteria for population and range trends are given as % change, and are combined in the same columns (e.g. BDP¹ and BDMp¹): red and amber colour-coding is used to show which a species qualified against.

When a species has changed list since BoCC3, shading of table cells is used to indicate the criteria responsible for that change.

Table 3. Species on the BoCC4 Amber list, the criteria under which they qualify, and values for those criteria. Amber criteria^b

[illegible]

Table 3. Species on the BoCC4 Amber list, the criteria under which they qualify, and values for those criteria. Amber criteria^b (cont.)

	BoCC4 ^a	ERI:OB	HD:rec	BDM _{P1}	BDM _{P2}	WDM _{P1}	WDM _{P2}	BDM _{P1}	BDM _{P2}	WDM _{Tr1}	BR	WR	BL	WL	BI	WI
Black Guillemot <i>Cephus grylle</i>	A														20–30	
Razorbill <i>Alca torda</i>	A														50–60	
Common Guillemot <i>Uria aalge</i>	A															
Little Tern <i>Sterna albifrons</i>	A															
Sandwich Tern <i>Sterna sandvicensis</i>	A			-25												
Common Tern <i>Sterna hirundo</i>	A															
Arctic Tern <i>Sterna paradisaea</i>	A			-38												
Black-headed Gull <i>Chroicocephalus ridibundus</i>	A					-33 to -41										60–70
Mediterranean Gull <i>Larus melanocephalus</i>	A															
Common Gull <i>Larus canus</i>	A															
Caspian Gull <i>Larus cachinnans</i>	NA															40–50
Lesser Black-backed Gull <i>Larus fuscus</i>	A										90					
Glaucous Gull <i>Larus hyperboreus</i>	A										170					
Iceland Gull <i>Larus glaucoides</i>	A										240					
Yellow-legged Gull <i>Larus michahellis</i>	A										1					
Great Black-backed Gull <i>Larus marinus</i>	A					-29	-33 to -58								20–30	
Stock Dove <i>Columba oenas</i>	A			-31	-30											
Tawny Owl <i>Strix aluco</i>	G															
Short-eared Owl <i>Asio flammeus</i>	A															
European Nightjar <i>Caprimulgus europaeus</i>	R															
Common Swift <i>Apus apus</i>	A			-38												
Common Kingfisher <i>Alcedo atthis</i>	A															
Common Kestrel <i>Falco tinnunculus</i>	A			-35	-46											
Shore Lark <i>Eremophila alpestris</i>	A															
House Martin <i>Delichon urbicum</i>	A															
Willow Warbler <i>Phylloscopus trochilus</i>	A			-32	-38											
Dartford Warbler <i>Sylvia undata</i>	A		*													
Short-toed Treecreeper <i>Certhia brachydactyla</i>	A															<300

Table 3. Species on the BoCC4 Amber list, the criteria under which they qualify, and values for those criteria.  criteria^b (cont.)

	BoCC3 ^a	ERLOB	HDrec	BDMp1	BDMp1/2	WDMp1	WDMp1/2	BR	WR	BL	WL
Dipper <i>Cinclus cinclus</i>	G										
Common Redstart <i>Phoenicurus phoenicurus</i>	A										
Duncock <i>Prunella modularis</i>	A										
Meadow Pipit <i>Anthus pratensis</i>	A										
Water Pipit <i>Anthus spinoletta</i>	A								190		
Bullfinch <i>Pyrrhula pyrrhula</i>	A										
Common Redpoll <i>Acanthis flammea</i>	A								310		
Scottish Crossbill <i>Loxia scotica</i>	A										100
Parrot Crossbill <i>Loxia pytyopsittacus</i>	A								65		
Snow Bunting <i>Plectrophenax nivalis</i>	A								100		
Lapland Bunting <i>Calcarius lapponicus</i>	A										710
Reed Bunting <i>Emberiza schoeniclus</i>	A										

^a BoCC3 assessments:

NA = Not assessed, R = Red, A = Amber, G = Green

^b Amber-list criteria:

ERLOB: Threatened in Europe (CR = Critically Endangered, EN = Endangered, VU = Vulnerable). HDrec: historical decline – recovery. BDMp1/2: moderate breeding population decline over 25 years/longer term. WDMp1/2: moderate non-breeding population decline over 25 years/longer term. BDM1/2: moderate breeding range decline over 25 years/longer term. WDM1/2: moderate non-breeding range decline over 25 years. BR/WR: breeding/non-breeding rarity. BL/WL: breeding/non-breeding localisation. Superscript text indicates whether species qualified as localised in IBAs, SPAs, or both. BI/WI: breeding/non-breeding international importance. Figures are given in bands for species exceeding the qualifying thresholds for the localisation and international importance criteria.

When a species has changed list since BoCC3, shading of table cells is used to indicate the criterion/criteria responsible for that change.

Eurasian Bittern moved from Red to Amber since it no longer qualifies under historical decline.

Table 4. Species Green-listed by BoCC4.

Name	BoCC3 ^a	Name	BoCC3 ^a
Tufted Duck <i>Aythya fuligula</i>	A ¹	Jackdaw <i>Corvus monedula</i>	G
Red-breasted Merganser <i>Mergus serrator</i>	G	Rook <i>Corvus frugilegus</i>	G
Goosander <i>Mergus merganser</i>	G	Carrion Crow <i>Corvus corone</i>	G
Ptarmigan <i>Lagopus muta</i>	G	Hooded Crow <i>Corvus cornix</i>	G
Red-throated Diver <i>Gavia stellata</i>	A ¹	Common Raven <i>Corvus corax</i>	G
Great Shearwater <i>Puffinus gravis</i>	G	Goldcrest <i>Regulus regulus</i>	G
Sooty Shearwater <i>Puffinus griseus</i>	A ¹	Firecrest <i>Regulus ignicapilla</i>	A ⁶
Great Cormorant <i>Phalacrocorax carbo</i>	G	Blue Tit <i>Cyanistes caeruleus</i>	G
Little Egret <i>Egretta garzetta</i>	A ²	Great Tit <i>Parus major</i>	G
Grey Heron <i>Ardea cinerea</i>	G	Crested Tit <i>Lophophanes cristatus</i>	A ¹
Little Grebe <i>Tachybaptus ruficollis</i>	A ^{3,4}	Coal Tit <i>Periparus ater</i>	G
Great Crested Grebe <i>Podiceps cristatus</i>	G	Bearded Tit <i>Panurus biarmicus</i>	A ^{7,2}
Red Kite <i>Milvus milvus</i>	A ¹	Woodlark <i>Lullula arborea</i>	A ^{1,8,2}
Northern Goshawk <i>Accipiter gentilis</i>	G	Sand Martin <i>Riparia riparia</i>	A ¹
Eurasian Sparrowhawk <i>Accipiter nisus</i>	G	Barn Swallow <i>Hirundo rustica</i>	A ¹
Common Buzzard <i>Buteo buteo</i>	G	Cetti's Warbler <i>Cettia cetti</i>	G
Golden Eagle <i>Aquila chrysaetos</i>	A ¹	Long-tailed Tit <i>Aegithalos caudatus</i>	G
Water Rail <i>Rallus aquaticus</i>	G	Common Chiffchaff <i>Phylloscopus collybita</i>	G
Moorhen <i>Gallinula chloropus</i>	G	Blackcap <i>Sylvia atricapilla</i>	G
Common Coot <i>Fulica atra</i>	G	Garden Warbler <i>Sylvia borin</i>	G
European Golden Plover <i>Pluvialis apricaria</i>	A ⁵	Lesser Whitethroat <i>Sylvia curruca</i>	G
Little Ringed Plover <i>Charadrius dubius</i>	G	Common Whitethroat <i>Sylvia communis</i>	A ⁴
Little Stint <i>Calidris minuta</i>	G	Sedge Warbler <i>Acrocephalus schoenobaenus</i>	G
Jack Snipe <i>Lymnocyptes minimus</i>	A ¹	Reed Warbler <i>Acrocephalus scirpaceus</i>	G
Pomarine Skua <i>Stercorarius pomarinus</i>	G	Waxwing <i>Bombycilla garrulus</i>	G
Long-tailed Skua <i>Stercorarius longicaudus</i>	G	Eurasian Nuthatch <i>Sitta europaea</i>	G
Little Auk <i>Alle alle</i>	G	Eurasian Treecreeper <i>Certhia familiaris</i>	G
Black Tern <i>Chlidonias niger</i>	A ¹	Wren <i>Troglodytes troglodytes</i>	G
Little Gull <i>Hydrocoloeus minutus</i>	A ¹	Blackbird <i>Turdus merula</i>	G
Rock Dove <i>Columba livia</i>	G	Robin <i>Erithacus rubecula</i>	G
Wood Pigeon <i>Columba palumbus</i>	G	European Stonechat <i>Saxicola rubicola</i>	G
Collared Dove <i>Streptopelia decaocto</i>	G	Northern Wheatear <i>Oenanthe oenanthe</i>	A ¹
Barn Owl <i>Tyto alba</i>	A ¹	Pied Wagtail <i>Motacilla alba</i>	G
Long-eared Owl <i>Asio otus</i>	G	Rock Pipit <i>Anthus petrosus</i>	G
Green Woodpecker <i>Picus viridis</i>	A ¹	Brambling <i>Fringilla montifringilla</i>	G
Great Spotted Woodpecker <i>Dendrocopos major</i>	G	Common Chaffinch <i>Fringilla coelebs</i>	G
Hobby <i>Falco subbuteo</i>	G	Greenfinch <i>Chloris chloris</i>	G
Peregrine Falcon <i>Falco peregrinus</i>	G	Common Crossbill <i>Loxia curvirostra</i>	G
Red-billed Chough <i>Pyrrhocorax pyrrhocorax</i>	A ¹	Goldfinch <i>Carduelis carduelis</i>	G
Magpie <i>Pica pica</i>	G	Siskin <i>Spinus spinus</i>	G
Eurasian Jay <i>Garrulus glandarius</i>	G		

^a BoCC3 assessments:

R = Red, A = Amber, G = Green. For species which have changed list since BoCC3 (all of which have moved from the Amber list), the superscript text indicates which criteria they no longer qualify for Amber under. ¹ = ERLOB (previously SPEC), ² = breeding localisation, ³ = moderate breeding population decline over 25 years, ⁴ = moderate breeding population decline over longer term, ⁵ = non-breeding international importance, ⁶ = breeding rarity, ⁷ = moderate breeding range decline over 25 years, ⁸ = moderate breeding range decline over longer term.

Table 5. Number of species moving between Red, Amber and Green lists since *BoCC3*.

		<i>BoCC4</i> status				
		Red	Amber	Green	Not assessed	Total
<i>BoCC3</i> status	Red	47	3	0	2	52
	Amber	18	85	22	1	126
	Green	2	7	59	0	68
	Not assessed	0	1	0	–	1
	Total	67	96	81	3	247 ¹

¹ Number of species assessed across *BoCC3* and *BoCC4* combined; *BoCC3* assessed 246 species, *BoCC4* 244 species.

lists since *BoCC3*, with 52 species (21% of those reassessed) changing *BoCC* status (table 5). The Red list has increased by 15, owing to 19 species being Red-listed for the first time, one species (Merlin *Falco columbarius*) returning to the Red list, and five species leaving the Red list either by moving to Amber (three species) or the list of former breeders (two). Of the species Red-listed for the first time, two moved directly from the Green list: White-fronted Goose *Anser albifrons* on account of the non-breeding population decline and Long-tailed Duck *Clangula hyemalis* as a consequence of being classified as Globally Threatened.

After a long decline from the nineteenth century onwards, the Wryneck last bred in the UK in 2002 and should now be considered a former breeder. Of the species to have been lost from the UK in modern times, this is probably the first that can be described as once having been common and widespread; it was recorded breeding in 54 counties between 1875 and 1900 (Holloway 1996). The other two species to have ceased breeding, Temminck's Stint and European Serin, have only ever been known as extremely rare or occasional breeders here.

The other notable change is the decrease in the relative length of the Amber list, which held 126 species in *BoCC3* but 96 in *BoCC4*:



Edmund Fellowes/BTO

419. The Merlin *Falco columbarius* returns to the Red list after being Amber-listed in *BoCC2* and *BoCC3*, as its recovery from historical decline has faltered.

Roger Riddington



420. Once a widespread breeding bird in the UK, the Wryneck *Jynx torquilla* is now classed as a former breeder, the last confirmed breeding record being in 2002. British birdwatchers can now expect to see it only as a spring and autumn passage migrant.

22 species moved from Amber to Green and 18 to Red, although seven were gained from the Green list and three from the Red. The net increase in the length of the Green list, by 14 species, is ostensibly good news and in

some instances due to genuine improvements in the status of species, but see below for a discussion of the influence of changes in the assessment process, which has resulted in an estimated nine species moving to the Green list. The only new species assessed by BoCC4, Caspian Gull, went onto the Amber list. Table 5 summarises the movements between the three lists since BoCC3. Of the 243 species assessed by both BoCC3 and BoCC4, 26 (10.7%) moved to a higher level of conservation concern and another 25 (10.3%) moved to a lower level of concern; the remaining 192 species (79.0%) did not change status between the two assessments.

An analysis of the reasons why species were Red-listed (which Red-list criteria they met) revealed that breeding population decline was by far the most important criterion; 50 species (74.6% of the Red list)

qualified owing to declines over 25 years (12 species), the longer term (14) or both time periods (24): Fig. 1 shows how many species were listed against each criterion, and reveals that a significant number (21 species, over the two time periods) qualified for the Red list under no other criteria. Only six species qualified under non-breeding population decline, over either time period.

The availability of new atlas data (Balmer *et al.* 2013) meant that the

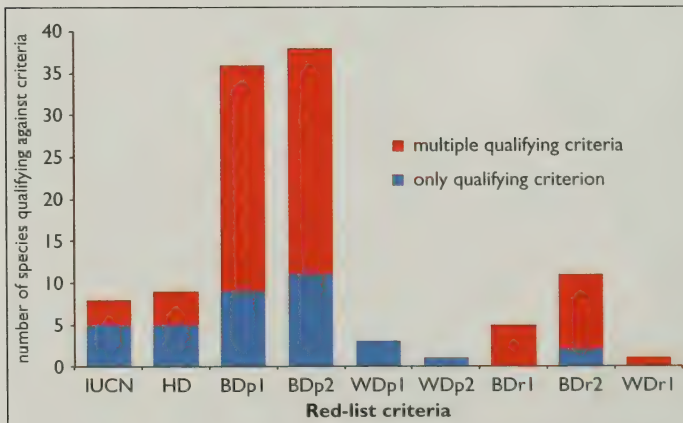


Fig. 1. Criteria under which species qualified for the BoCC4 Red list. Bars show the number of species qualifying against each Red-list criterion: blue sections indicate the number of species which qualified against no other Red-list criteria, i.e. this criterion was the sole reason for the Red-listing.

range-change criterion increased in importance in this review. Whereas *BoCC3* listed only five species against severe range decline (all over the longer-term period), *BoCC4* found that 14 species showed a severe decline in range over at least one of the time periods and, notably, two species (Woodcock *Scolopax rusticola* and Cirl Bunting *Emberiza cirlus*) were Red-listed owing to range decline alone.

Finally, a concerning trend is the increasing number of the UK's species which are considered Globally Threatened. Whereas previous *BoCC* assessments have listed only two species, Balearic Shearwater and Aquatic Warbler, because of global threat, *BoCC4* lists an additional six: Common Pochard *Aythya ferina*, Long-tailed Duck, Velvet Scoter *Melanitta fusca*, Slavonian Grebe, Puffin *Fratercula arctica* and Turtle Dove *Streptopelia turtur*. Five of these eight Globally Threatened species did not qualify for Red-listing under any other criteria (Pochard, Slavonian Grebe and Turtle Dove being the exceptions).

The impact of changes in the assessment process

Although the *BoCC4* review has seen a substantial change in the composition of Red, Amber and Green lists, as described previously there were some changes in the way the

review was conducted. We have explored the likely impact of these changes on our results, to be confident that the trends in list lengths are not an artefact of these changes.

We can clearly identify how our changes in treatment of recovery from historical decline (criteria HD and HDrec) influence the *BoCC4* outcome (table 6): if we had applied the approach used in *BoCC3*, then Merlin would have remained Amber-listed, under the HDrec criterion, rather than returning to Red as HD. Marsh Harrier and Osprey were considered to have shown complete recovery from historical decline by *BoCC3* but under *BoCC4* they are no longer considered to have recovered sufficiently to meet our new threshold. The change in assessment process is not responsible for a change in their *BoCC* status, however, as both species are also Amber-listed under additional criteria. The changes have no effect on the listing of other HD species.

The availability of wintering range data from *Bird Atlas 2007–11* meant that we were able to assess non-breeding range change (WDr¹) across all relevant species for the first time. Very few species showed substantial non-breeding range declines; only one, Capercaillie *Tetrao urogallus*, declined by more than 50%, and no species were Red- or



Roger Riddington

421. Several results from the current review show the impact of a changing climate, and the movement of Ringed Plover *Charadrius hiaticula* from Amber to Red is one example, reflecting the decreasing number of winter visitors as birds are no longer pushed across to the UK by cold weather on the Continent.

Ben Andrew/RSPB-images



422. Largely as a result of targeted conservation effort, to create and maintain reedbeds in suitable condition, the Eurasian Bittern *Botaurus stellaris* moved from Red to Amber in the current review, another step on its continued recovery as a breeding species in the UK.

Amber-listed on this criterion alone.

The change in how status at the European level was incorporated (moving from the SPEC to the ERLOB criterion) has had more of an impact on our lists, although it affects only potential listing on the Amber and Green lists. Some 65 species that qualified under the SPEC criterion in *BoCC3* did not qualify under ERLOB in the new assessment (only 20 UK species were listed as threatened by ERLOB), and as a consequence, 15 of these moved to the Green list (the remaining 50 being retained as Red or Amber through other criteria). Without having new SPEC assessments for comparison, it is difficult to be certain how many of those 15 species would have been retained on the Amber list if new SPECs had been available. Additional analyses conducted on data from EU member states (BirdLife International 2015) suggest that, at that scale, six species (e.g. Tufted Duck

Aythya fuligula and Green Woodpecker *Picus viridis*) had recovered from the measures of population decline and/or depletion that resulted in them being SPEC-listed previously, and would not have been SPEC-listed if such assessments had been made. It is less clear for the remaining nine species, but it seems likely that most if not all of these would have been retained as SPEC – for example, Golden Eagle *Aquila chrysaetos* would have still qualified as Rare within Europe (see BirdLife International 2004). It is also possible that new assessment would have led to the SPEC-listing of some species for the first time, and potentially the movement of these species from the Green list to Amber.

In conclusion, the changes in *BoCC4* criteria resulted in one additional species on the Red list, and approximately nine additional species on the Green list, compared with the same criteria used for *BoCC3* (table 6).

Table 6. The likely impact of the changes of assessment criteria (for historical decline and European status) on <i>BoCC4</i> results.		
Change in process	Effect (<i>BoCC3</i> list → <i>BoCC4</i> list)	Species affected
Changes in recovery from HD	Amber → Red	Merlin
Using ERLOB instead of SPEC status	Amber → Green	Sooty Shearwater, Golden Eagle, Jack Snipe, Black Tern, Little Gull, Red-billed Chough, Sand Martin, Barn Swallow, Northern Wheatear

Data gaps

We lacked population trends for 21 breeding species, including seabird species for which the UK is internationally important (e.g. Manx Shearwater *Puffinus puffinus*), upland species (e.g. Dunlin *Calidris alpina*), the endemic Scottish Crossbill *Loxia scotica* and a disparate collection of other species with distributions, habitat preferences and behaviours which mean that they elude the attentions of standard monitoring programmes (e.g. Eurasian Wigeon *Anas penelope*, Long-eared Owl *Asio otus* and Rock Pipit *Anthus petrosus*). These are important gaps, not least because, as shown in fig. 1, the criteria for breeding population decline tend to be by far the most influential in determining listing status. It is worth noting that another of this group, the Short-eared Owl *Asio flammeus*, showed a long-term decline in range of 47%; had population monitoring been undertaken for the same period it is distinctly possible that it may have qualified for the Red list. Noting that longer-term breeding trends were lacking for a much larger number of birds (54 species), however, does indicate that recent decades have seen a welcome improvement in our monitoring coverage.

Race-level assessment

BoCC4 assessments were made for 224 races (of 173 species) occurring regularly in the UK. Of these, 57 races (25.4%) were Red-listed, 94 (42.0%) Amber-listed, and 73 (32.6%) Green-listed; these proportions are similar to those for the species-level assessment. Lists of races on the three lists and the criteria under which they qualify are given in tables 7–9.

Eighteen races have moved onto the Red list since BoCC3: 16 from Amber, and two newly assessed races (Slavonian Grebe and Greater Scaup). Many of the moves to the Red list mirror changes in parent species, for example because of UK population declines which apply to the race as well as to the species, such as for Shag *Phalacrocorax a. aristotelis* and Pied Flycatcher *Ficedula h. hypoleuca*. However, three of the new Red-listed races are not Red-listed at species level (in all, 44 races have a different BoCC4 listing from their parent species) including, most notably, the British race of Greenfinch *Chloris chloris harrisoni* – as a species, Greenfinch is Green-listed but the race would qualify as Globally Threatened due to recent decline, driven by outbreaks of the parasitic disease trichomonosis (Lawson *et al.* 2012).



423. The European Nightjar *Caprimulgus europaeus* moves from Red to Amber in BoCC4, joining other largely heathland and grassland species, such as Stone-curlew *Burhinus oedipnemus* and Woodlark *Lullula arborea*, which made the same move in the BoCC3 review.

Andy Hay/RSPB-images

Ben Hall/RSPB-images



424. Common Pochard *Aythya ferina* has moved from Amber to Red as a consequence of population decline – not just in the UK, where it has shown a severe drop in non-breeding numbers, but also more widely. This international decline has resulted in it being listed as Vulnerable on the IUCN Global Red list.

Stanley Porter/RSPB-images



425. The Woodcock *Scolopax rusticola* moves from Amber to Red in BoCC4 as a consequence of a shrinking breeding range in the UK. It is one of just two species (Cirl Bunting *Emberiza cirlus* being the other) that are Red-listed owing to range decline alone.

Table 7. Races on the BoCC4 Red list and the criteria under which they qualify. Red^b and Amber^c criteria

Species ^d / Race	BoCC4 species ^a	IUCN	HD	BDP ¹ & BDMp ¹	BDP ² & BDMp ²	WDP ¹ & WDMp ¹	WDP ² & WDMp ²	BDP ¹ & BDMp ¹	BDP ² & BDMp ²	WDP ¹ & WDMp ¹	ERLOB	HHOCC	MR	WM	MI	VS1	RI	WT
'Taiga Bean Goose' <i>Anser f. fabalis</i>	A	*									*							*
'Greenland White-fronted Goose'	R	*									*							
<i>Anser albifrons flavirostris</i>																		
'European White-fronted Goose'	R					*	*									*		
<i>Anser a. albifrons</i>																		
*Greater Scaup <i>Aythya m. marila</i>	R	*					*				*					*		
Common Eider <i>Somateria m. mollissima</i>	A	*									*							
Black Grouse <i>Tetrao tetrix britannicus</i>	R	*	*	*	*					*	*					*		
Capercaillie <i>Tetrao u. urogallus</i>	R			*	*													
Grey Partridge <i>Perdix p. perdix</i>	R			*	*													
*Fulmar <i>Fulmarus g. glacialis</i>	A	*		*							*				*			
*Shag <i>Phalacrocorax a. aristotelis</i>	R			*							*							
*Red-necked Grebe <i>Podiceps g. grisegena</i>	R			*		*												
*Slavonian Grebe <i>Podiceps a. auritus</i>	R			*	*								*					
Hen Harrier <i>Circus c. cyaneus</i>	R		*															
*Ringed Plover <i>Charadrius h. hiaticula</i>	R					*												
Whimbrel <i>Numenius p. phaeopus</i>	R			*				*										
*Eurasian Curlew <i>Numenius a. arquata</i>	R			*	*						*							
Black-tailed Godwit <i>Limosa l. limosa</i>	R			*	*						*							
Roseate Tern <i>Sterna d. dougalli</i>	R		*	*	*						*		*	*				
*Kittiwake <i>Rissa t. tridactyla</i>	R			*	*													
Herring Gull <i>Larus argentatus argentus</i>	R	*		*	*						*						*	
Turtle Dove <i>Streptopelia t. turtur</i>	R	*		*	*						*							
Common Cuckoo <i>Cuculus c. canorus</i>	R	*		*	*				*									
*Common Kingfisher <i>Alcedo atthis ispida</i>	A	*		*							*							
Lesser Spotted Woodpecker	R	*		*	*						*							
<i>Dendrocopos minor comminutus</i>																		
*Merlin <i>Falco columbarius aesalon</i>	R	*	*								*						*	

Table 7. Races on the BoCC4 Red list and the criteria under which they qualify. Red^b and Amber^c criteria (cont.)

Species ^d / Race	BoCC4 species ^a	IUCN	HD	BDP ¹ & BDM ¹ ^e	BDP ² & BDM ² ^e	WDP ¹ & WDM ¹ ^e	WDP ² & WDM ² ^e	* BDP ¹ & BDM ¹	BDP ² & BDM ²	WDP ¹ & WDM ¹	EUR.OB	Thores	BR	WR	BT	WT	BT	WT
Golden Oriole <i>Oriolus a. oriolus</i>	R																	
Red-backed Shrike <i>Lanius c. collurio</i>	R		*	*	*						*						*	
Willow Tit <i>Poecile montana kleinschmidtii</i>	R			*	*				*									
Marsh Tit <i>Poecile palustris dresseri</i>	R			*	*													
Skylark <i>Alauda a. arvensis</i>	R			*	*													
Grasshopper Warbler <i>Locustella n. naevia</i>	R			*	*													
Savi's Warbler <i>Locustella l. luscinioides</i>	R			*	*						*		*				*	
'Fair Isle Wren'	G																	
<i>Troglodytes troglodytes fridariensis</i>																		
'St Kilda Wren' <i>Troglodytes t. hirtensis</i>	G										*		*				*	
Common Starling <i>Sturnus v. vulgaris</i>	R			*	*													
Ring Ouzel <i>Turdus t. torquatus</i>	R			*	*												*	
'Hebridean Song Thrush'	R																	
<i>Turdus philomelos hebridensis</i>																		
Song Thrush <i>Turdus p. clarkii</i>	R			*	*												*	
Redwing <i>Turdus i. iliacus</i>	R			*	*													
*Mistle Thrush <i>Turdus v. viscivorus</i>	R			*	*								*					
Spotted Flycatcher <i>Muscicapa s. striata</i>	R			*	*													
Common Nightingale	R			*	*													
<i>Luscinia m. megarhynchos</i>																		
*Pied Flycatcher <i>Ficedula h. hypoleuca</i>	R			*	*									*				
*Black Redstart	R			*	*													
<i>Phoenicurus ochruros gibraltariensis</i>																		
House Sparrow <i>Passer d. domesticus</i>	R				*													
Tree Sparrow <i>Passer m. montanus</i>	R				*													
Yellow Wagtail <i>Motacilla flava flavissima</i>	R			*	*													
*Grey Wagtail <i>Motacilla c. cinerea</i>	R			*	*													
Tree Pipit <i>Anthus t. trivialis</i>	R			*	*													

Table 7. Races on the BoCC4 Red list and the criteria under which they qualify. Red^b and Amber^c criteria (cont.)

Species ^d / Race	BoCC4 species ^a	IUCN	HD	BDP ¹ & BDMp ¹	BDP ² & BDMp ²	WDP ¹ & WDMp ¹	WDP ² & WDMp ²	* BDP ¹ & BDMp ¹	* BDP ² & BDMp ²	WDr ¹ & WDMr ¹	ERLOB	HDrec	BR	WR	BL	WL	BI	WI
Hawfinch <i>Coccothraustes c. coccothraustes</i>	R																	
*Greenfinch <i>Chloris chloris harrisoni</i>	G	*								*	*						*	
Linnet <i>Linaria c. cannabina</i>	R																	
Twite <i>Linaria flavirostris benesonorum</i>	R	*		*													*	
Twite <i>Linaria f. pipilans</i>	R		*														*	
Yellowhammer <i>Emberiza c. citrinella</i>	R			*														
Corn Bunting <i>Emberiza calandra clanceyi</i>	R	*	*	*	*			*	*	*	*		*				*	
Corn Bunting <i>Emberiza c. calandra</i>	R		*	*	*	*		*	*	*	*							

^a BoCC4 assessments for 'parent' species: R = Red, A = Amber, G = Green

^b Red-list criteria:

IUCN: Globally Threatened. HD: historical decline in the breeding population. BDP^{1/2}: severe breeding population decline over 25 years/longer term. WDP^{1/2}: severe non-breeding population decline over 25 years/longer term. BDr^{1/2}: severe breeding range decline over 25 years/longer term. WDr¹: severe non-breeding range decline over 25 years.

^c Amber-list criteria:

ERLOB: Threatened in Europe. HDrec: historical decline – recovery. BDMp^{1/2}: moderate breeding population decline over 25 years/longer term. WDMp^{1/2}: moderate non-breeding population decline over 25 years/longer term. BDMr^{1/2}: moderate breeding range decline over 25 years/longer term. WDMr¹: moderate non-breeding range decline over 25 years. BR/WR: breeding/non-breeding rarity. BL/WL: breeding/non-breeding localisation. BI/WI: breeding/non-breeding international importance.

Red and Amber criteria for population and range trends are combined in the same columns (e.g. BDP¹ and BDMp¹); red and amber colour-coding is used to show which a species qualified against.

^d Asterisks indicate species with a changed race-level status since BoCC3.

This table lists Red-listed races of polytypic species only: it does not include monotypic species, e.g. Long-tailed Duck.

Table 8. Races on the BoCC4 Amber list and the criteria under which they qualify.

Species / Race	BoCC4 species ^a	ERLOB	HDrec	BDMP ¹	BDMP ²	WDMp ¹	WDMp ²	BDMP ¹	WDMp ¹	BDMP ¹	WDR	HR	WDR	HR	WDR	HR	WDR	HR
Bewick's Swan <i>Cygnus columbianus bewickii</i>	A	*				*												*
'Tundra Bean Goose' <i>Anser fabalis rossicus</i>	A																	*
Greylag Goose <i>Anser a. anser</i>	A																	*
*'Dark-bellied Brent Goose' <i>Branta b. bernicla</i>	A																	*
'Pale-bellied Brent Goose' <i>Branta b. hrota</i>	A																	*
Eurasian Teal <i>Anas c. crecca</i>	A																	*
Mallard <i>Anas p. platyrhynchos</i>	A			*														*
Common Eider <i>Somateria mollissima faeroensis</i>	A			*														*
Common Goldeneye <i>Bucephala c. clangula</i>	A																	*
Common Quail <i>Coturnix c. coturnix</i>	A		*															*
Red Grouse <i>Lagopus lagopus scoticus</i>	A																	*
Ptarmigan <i>Lagopus muta millaisi</i>	G																	*
Black-throated Diver <i>Gavia a. arctica</i>	A																	*
European Storm-petrel <i>Hydrobates p. pelagicus</i>	A																	*
Leach's Storm-petrel <i>Oceanodroma l. leucorhoa</i>	A																	*
Great Cormorant <i>Phalacrocorax c. carbo</i>	G																	*
Great Cormorant <i>Phalacrocorax carbo sinensis</i>	G																	*
Eurasian Bittern <i>Botaurus s. stellaris</i>	A		*															*
Eurasian Spoonbill <i>Platalea l. leucorodia</i>	A																	*
Black-necked Grebe <i>Podiceps n. nigricollis</i>	A		*															*
Marsh Harrier <i>Circus a. aeruginosus</i>	A		*															*
Osprey <i>Pandion h. haliaetus</i>	A		*															*
Common Crane <i>Grus g. grus</i>	A																	*
*Stone-curlew <i>Burhinus o. oediceenus</i>	A	*																*
Oystercatcher <i>Haematopus o. ostralegus</i>	A																	*
Black-tailed Godwit <i>Limosa limosa islandica</i>	R																	*
Bar-tailed Godwit <i>Limosa l. lapponica</i>	A	*																*
Turnstone <i>Arenaria i. interpres</i>	A																	*

Table 8. Races on the BoCC4 Amber list and the criteria under which they qualify. (cont.)

[illegible]

Table 8. Races on the BoCC4 Amber list and the criteria under which they qualify. (cont.)

Species ^c / Race	ERLOB	HDrec	BDMp1	BDMp2	BDMp3	BDMp4	BDMp5	BDMp6	WR	BR	WL	BI
Common Chaffinch <i>Fringilla coelebs gengleri</i>												
Bullfinch <i>Pyrrhula pyrrhula pileata</i>												
Linnet <i>Linaria cannabina autochthona</i>												
*Common Redpoll <i>Acanthis f. flammea</i>												
Goldfinch <i>Carduelis carduelis britannica</i>												
Snow Bunting <i>Plectrophenax n. nivalis</i>												
Snow Bunting <i>Plectrophenax nivalis insulae</i>												
Lapland Bunting <i>Calcarius l. lapponicus</i>												
Lapland Bunting <i>Calcarius l. subcalcaratus</i>												
Reed Bunting <i>Emberiza s. schoeniclus</i>												

^a BoCC4 assessments for 'parent' species: R = Red, A = Amber, G = Green

^b Amber-list criteria:

ERLOB: Threatened in Europe. HDrec: historical decline – recovery. BDMp1/2: moderate breeding population decline over 25 years/longer term. WDMp1/2: moderate non-breeding population decline over 25 years/longer term. BDMr1/2: moderate breeding range decline over 25 years/longer term. WDMr1: moderate non-breeding range decline over 25 years. BR/WR: breeding/non-breeding rarity. BL/WL: breeding/non-breeding localisation. BI/WI: breeding/non-breeding international importance. Asterisks indicate species with a changed race-level status since BoCC3.

This table lists Amber-listed races of polytypic species only; it does not include monotypic species, e.g. Pink-footed Goose *Anser brachyrhynchus*.

Table 9. Races on the BoCC4 Green list.

Species / Race	BoCC4 species ^a	Species / Race	BoCC4 species ^a
Goosander <i>Mergus m. merganser</i>	G	Goldcrest <i>Regulus r. regulus</i>	G
Little Egret <i>Egretta g. garzetta</i>	G	Firecrest <i>Regulus i. ignicapilla</i>	G
Grey Heron <i>Ardea c. cinerea</i>	G	Blue Tit <i>Cyanistes c. caeruleus</i>	G
Little Grebe <i>Tachybaptus r. ruficollis</i>	G	Great Tit <i>Parus m. major</i>	G
Great Crested Grebe <i>Podiceps c. cristatus</i>	G	Coal Tit <i>Periparus a. ater</i>	G
Northern Goshawk <i>Accipiter g. gentilis</i>	G	Coal Tit <i>Periparus a. hibernicus</i>	G
Eurasian Sparrowhawk <i>Accipiter n. nisus</i>	G	Bearded Tit <i>Panurus b. biarmicus</i>	G
Common Buzzard <i>Buteo b. buteo</i>	G	Woodlark <i>Lullula a. arborea</i>	G
Golden Eagle <i>Aquila c. chrysaetos</i>	G	Sand Martin <i>Riparia r. riparia</i>	G
Water Rail <i>Rallus a. aquaticus</i>	G	Barn Swallow <i>Hirundo r. rustica</i>	G
Moorhen <i>Gallinula c. chloropus</i>	G	Cetti's Warbler <i>Cettia c. cetti</i>	G
Common Coot <i>Fulica a. atra</i>	G	Common Chiffchaff <i>Phylloscopus c. collybita</i>	G
Little Ringed Plover <i>Charadrius dubius curonicus</i>	G	Willow Warbler <i>Phylloscopus trochilus acredula</i>	A
Ringed Plover <i>Charadrius hiaticula tundrae</i>	R	Blackcap <i>Sylvia a. atricapilla</i>	G
Dunlin <i>Calidris alpina arctica</i>	A	Garden Warbler <i>Sylvia b. borin</i>	G
Long-tailed Skua <i>Stercorarius l. longicaudus</i>	G	Lesser Whitethroat <i>Sylvia c. curruca</i>	G
Razorbill <i>Alca t. torda</i>	A	Common Whitethroat <i>Sylvia c. communis</i>	G
Little Auk <i>Alle a. alle</i>	G	Reed Warbler <i>Acrocephalus s. scirpaceus</i>	G
Black Tern <i>Chlidonias n. niger</i>	G	Waxwing <i>Bombycilla g. garrulus</i>	G
Lesser Black-backed Gull <i>Larus fuscus intermedius</i>	A	Eurasian Nuthatch <i>Sitta europaea caesia</i>	G
Herring Gull <i>L. a. argentatus</i>	R	Eurasian Treecreeper <i>Certhia familiaris britannica</i>	G
Rock Dove/Feral Pigeon <i>Columba l. livia</i>	G	Wren <i>Troglodytes t. troglodytes</i>	G
Wood Pigeon <i>Columba p. palumbus</i>	G	Blackbird <i>Turdus m. merula</i>	G
Collared Dove <i>Streptopelia d. decaocto</i>	G	Song Thrush <i>Turdus p. philomelos</i>	R
Barn Owl <i>Tyto a. alba</i>	G	Redwing <i>Turdus iliacus coburni</i>	R
Long-eared Owl <i>Asio o. otus</i>	G	Robin <i>Erithacus r. rubecula</i>	G
Green Woodpecker <i>Picus v. viridis</i>	G	Robin <i>Erithacus r. melophilus</i>	G
Hobby <i>Falco s. subbuteo</i>	G	European Stonechat <i>Saxicola rubicola hibernans</i>	G
Peregrine Falcon <i>Falco p. peregrinus</i>	G	Northern Wheatear <i>Oenanthe o. oenanthe</i>	G
Magpie <i>Pica p. pica</i>	G	'Greenland Wheatear' <i>Oenanthe o. leucorhoa</i>	G
Eurasian Jay <i>Garrulus g. glandarius</i>	G	Dunnock <i>Prunella m. modularis</i>	A
Jackdaw <i>Corvus m. monedula</i>	G	Dunnock <i>Prunella m. hebridum</i>	A
Jackdaw <i>Corvus m. spermologus</i>	G	Rock Pipit <i>Anthus petrosus littoralis</i>	G
Rook <i>Corvus f. frugilegus</i>	G	Common Chaffinch <i>Fringilla c. coelebs</i>	G
Carrion Crow <i>Corvus c. corone</i>	G	Greenfinch <i>Chloris c. chloris</i>	G
Hooded Crow <i>Corvus c. cornix</i>	G	Common Crossbill <i>Loxia c. curvirostra</i>	G
Common Raven <i>Corvus c. corax</i>	G		

^a BoCC4 assessments for 'parent' species: R = Red, A = Amber, G = Green.

This table lists Green-listed races of polytypic species only; it does not include monotypic species, e.g. Brambling *Fringilla montifringilla*.

Discussion

The growing Red list

BoCC4 has placed more species onto the Red list than ever before. Some 67 species are Red-listed (27.5% of the species assessed) and that list has grown by a substantially larger increment than in any previous BoCC review (fig. 2). In total, 20 species have moved to Red, with only three species moving from Red to Amber.

The Red list increased substantially between the second and third BoCC reviews but a number of those additions were due to

changes to the assessment process. In particular, the introduction of the longer-term time window for consideration of population and range trends resulted in 11 species moving to (or staying on) the Red list that would not otherwise have done so. This is not the case here; only Merlin has returned to the Red list as a consequence of changes to the way we treat recovery from historical decline. The other significant change in our process is the treatment of conservation concern at a European level because we lack a current SPEC assessment. This has resulted

in a number of species that may otherwise have been Amber-listed being moved to the Green list; the Green list grew by 13 species, of which nine (or possibly more) may have been Amber-listed had we been able to retain the use of SPEC. Some of these species continue to merit conservation attention, including Red-billed Chough *Pyrrhocorax pyrrhocorax*, which remains relatively rare and range-restricted in the UK; and Golden Eagle, also relatively rare and range-restricted in the UK, due to persecution, both historical and recent (Whitfield *et al.* 2007).

A priority list such as BoCC4, or a national IUCN Red List, should not, however, be the only consideration in decisions on which

species should be the recipients of conservation effort. As well as BoCC status, we encourage the consideration of other factors, such as likelihood of conservation action being successful, the logistics of such action and synergies with other conservation activi-

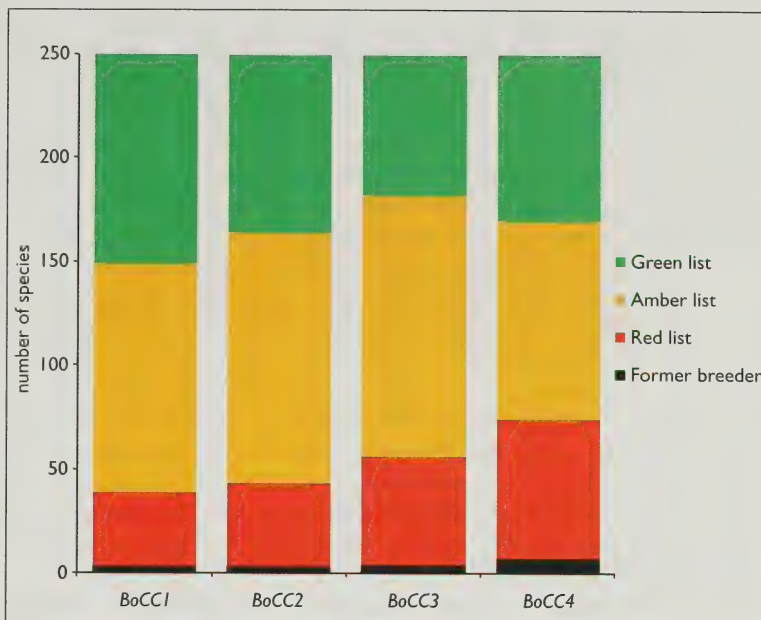


Fig. 2. Lengths of Red, Amber and Green lists in the four BoCC assessments. Note that the assessment process has developed over time, with changes in data availability and criteria between assessments, and a small number of changes in Red, Amber and Green list lengths have been as a consequence of these changes.



Edmund Fellowes/BTO

426. The Whinchat *Saxicola rubetra* moves from Amber to the Red list in BoCC4, and is a member of two distinct groupings to cause concern – upland species and Afro-Palearctic migrants.

ties. And while we might expect most Red-listed species to be the highest priorities for conservation, there are some on which it might not be appropriate to expend scarce conservation resources. These might include species at the edge of their European range in the UK, for which the factors that determine their abundance in the UK may lie elsewhere. Conversely, there are species on the *BoCC* Amber list that have been, and may continue to be, high priorities for conservation action, especially ones that might be considered as conservation dependent. There have been a number of noteworthy conservation successes in the UK due to the delivery of targeted and well-informed conservation action for priority bird species. While many of these, such as Corn Crake *Crex crex* and Cirl Bunting, remain Red-listed, we should celebrate the movement of others from Red to Amber, such as Red Kite and Marsh Harrier in *BoCC2*, Stone-curlew and Woodlark in *BoCC3*, and Eurasian Bittern *Botaurus stellaris* and European Nightjar *Caprimulgus*

europaeus (as well as Red Kite moving to the Green list) in *BoCC4*. Simply because a species moves from Red to Amber does not, however, necessarily mean that conservation effort can be withdrawn immediately, as many remain dependent upon conservation action. A good example is the Stone-curlew. A large part of the UK population nests in arable fields, in which labour-intensive interventions are required to protect the birds from agricultural operations; an abrupt cessation of that effort would most likely result in the Stone-curlew's return to the Red list. Work is ongoing to encourage more birds to nest in semi-natural grasslands or in safe nesting plots on arable land, supported by agri-environment schemes, paving the way for a more sustainable population.

Themes in bird conservation in the UK, as highlighted by *BoCC4*

Some consistent themes have emerged from previous assessments and other overviews of the status of the UK's biodiversity (e.g. Burns *et al.* 2013), and this review largely reiterates these. Our overriding concern is for the ever-increasing number of species on the Red list: despite a proven ability to improve the status of species of concern, the rate at which species are added to the Red list greatly exceeds our current ability to take recovery action. If we believe that the presence of species on Red lists is an effective barometer of the state of our wildlife (e.g. Butchart *et al.* 2005), then this review paints a bleak picture.

In addition to the increase in the number of species on the Red list, three species have moved to the list of former breeders. Although this is loss at a UK rather than global scale, and while for highly mobile taxa such as birds recolonisation can never be ruled out, these losses should not be overlooked. In particular, Wryneck becomes the first once-widespread species to have been lost from the UK since the extinction of the Great Bustard *Otis*



Roger Riddington

427. Concerns about the state of the UK's internationally important seabird populations is heightened by the *BoCC4* review, with three familiar species moving to the Red list, the Puffin *Fratercula arctica* as a result of its IUCN listing as Vulnerable.

tarda in around 1833. It is a sobering thought that the Wryneck was once sufficiently common for the RSPB to sell nestboxes for it.

That no new farmland birds have moved to the Red list probably reflects the fact that the species which continue to be affected adversely by modern agricultural methods are already listed there. Although the trends of some of these species have levelled out in recent years, others continue to decline; most alarmingly in the case of Turtle Dove, which has declined by 13% per annum since 1995 (Harris *et al.* 2015). Declines in woodland specialists (as opposed to generalists, which on the whole have been doing well; Defra 2014) were highlighted in *BoCC3*, and this review adds three more woodland

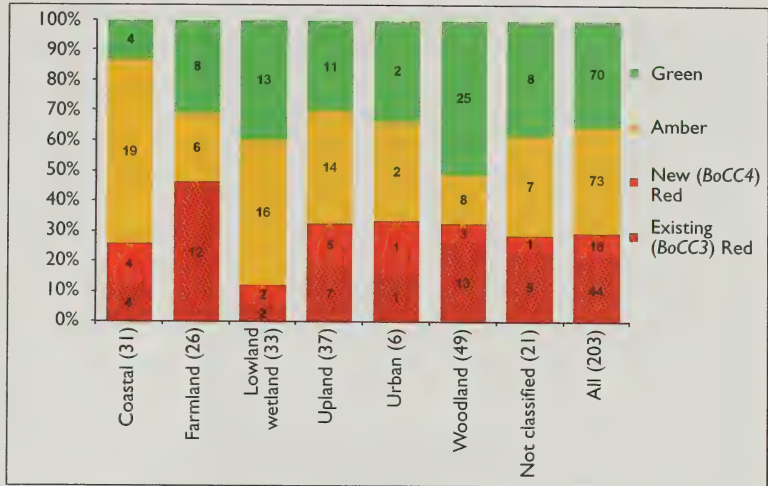


Fig. 3. Proportion of breeding birds in the Red, Amber and Green lists by major habitat type (habitat categories follow Gibbons *et al.* 1993). Bars show percentages in the Red, Amber and Green lists, figures give the actual number of species.

birds, Woodcock, Common Nightingale *Luscinia megarhynchos* and Pied Flycatcher, to the Red list. There are now 16 woodland species on the Red list, more than any other habitat group, although a higher proportion of farmland species are Red-listed (fig. 3).

The greatest increases in the proportion of species Red-listed are for birds breeding in upland and coastal habitats (five and four



Jeff & Allison Kew/BTO

428. Another woodland specialist and long-distance migrant, the Common Nightingale *Luscinia megarhynchos* shows such a severe decline in breeding numbers that it is now Red-listed.

species respectively). The increase in coastal species chiefly reflects the deteriorating status of the UK's seabirds; with the addition of Kittiwake *Rissa tridactyla*, Shag and Puffin, the number of seabirds on the Red list has nearly doubled. Furthermore, with Razorbill *Alca torda* now considered as globally Near Threatened (BirdLife International 2015), there is growing concern for our seabirds, particularly as in global terms they are among the most important components of the UK's avifauna. We should also note that, with the addition of Velvet Scoter and Long-tailed Duck, four of the UK's seaducks are

now on the Red list, although the causes of their declines may be different from and possibly unrelated to marine impacts.

The recent *Bird Atlas 2007–11* (Balmer et al. 2013) highlighted two areas of concern that, arguably, have not before been recognised as being among the UK's highest conservation priorities: declines in the ranges of both breeding waders and upland breeding species (and there is, of course, much overlap between these two groups). *BoCC4* lends support for this view. The addition of five upland breeding species to the Red list – Dotterel, Eurasian Curlew *Numenius arquata*,

Merlin, Whinchat *Saxicola rubetra* and Grey Wagtail *Motacilla cinerea* – means that there are as many species of upland birds Red-listed as there are farmland birds. In total, there are now nine species of wader on the Red list, and while the drivers of the declines are likely to be varied, it is clear that this group is under pressure (of 22 wader species breeding in the UK, only two remain on the Green list). Brown et al. (2015) argued that Eurasian Curlew should currently be considered the UK's most pressing bird conservation priority, given the global concern (Near Threatened) for the species, the significance of the UK's breeding population and the rapid decline in that population.

Another concern raised by the *BoCC3* assessment was population decline in a growing number of long-distance migrants, particularly those that winter in sub-Saharan Africa, and more specifically in the humid tropics (which have shown greater recent declines than species wintering in other regions; Hayhow et al. 2014). A further three Afro-Palearctic migrants, Common Nightingale, Pied Flycatcher and Whinchat, moved to the Red list in this review, and declines have continued in the majority of those listed already.



Andy Hay/RSPB-images

429. The UK holds about half the world's population of Greenland White-fronted Geese *Anser albifrons flavirostris* in winter. The most recent census results (2014/15) indicate the lowest numbers in Britain for 30 years. The ultimate causes of a collapse in productivity remains poorly understood, but probably relates to changing spring weather conditions and competition with Canada Geese *Branta canadensis* on the breeding areas – probably acting in combination.

Climate change may be behind some of the changes in listings reported here. Many species are thought to benefit from climate change (e.g. Pearce-Higgins *et al.* 2013), and the population increases in Little Egret *Egretta garzetta* and Firecrest *Regulus ignicapilla*, which have resulted in their move to the Green list, are likely to be at least partly in response to the UK's warming climate. Other species may be adversely affected by the UK's changing climate, including those at the southern edge of their range for which the 'climatic envelope' (the area within which climatic conditions are suitable for a species) is moving away from the UK (Huntley *et al.* 2007). This could be the case, for example, for Dotterel, although other pressures, such as increased nitrogen deposition and grazing, may have caused its decline (Hayhow *et al.* 2015). Other climate change impacts include the shifting of wintering ranges, which has led to UK population declines in White-fronted Goose and Ringed Plover *Charadrius hiaticula*, and the influence of climate upon marine food chains, which is affecting the food supplies of the Kittiwake (Frederiksen *et al.* 2007) and other seabirds.

BoCC at the race level

This was the second BoCC assessment to look at the status of regularly occurring races of birds in the UK, and we believe that they serve as a useful complement to the species-level assessments. We recommend that they are used to draw distinctions between the differing status of races of the same species, enabling better targeted conservation action – for example towards the nominate race of Black-tailed Godwit rather than the prospering Icelandic race *L. l. islandica*. In addition, we should highlight the precarious status of some races that are endemic, or nearly so, to the UK. While the loss of Wryneck as a UK breeding species is to be lamented, our birds were of the nominate race, which is still found widely across Europe; the rapidly declining British popula-



Ben Hall/RSPB-images

430. The Greenfinch *Chloris chloris* is Green-listed as a species in this review, yet the British race *C. c. harrisoni* is Red-listed as a result of recent decline, driven by outbreaks of the parasitic disease trichomonosis.

tions of Lesser Spotted Woodpecker *Dendrocopos minor comminutus* and Willow Tit *Poecile montana kleinschmidtii* are of endemic races, so if lost would be gone forever.

The future of BoCC

While BoCC assessments provide a clear foundation for identifying priority bird species, this is not the only way of doing so, and indeed a different approach has been used to identify priority species for the UK's devolved administrations. Assessment against the BoCC criteria is rather a 'data-hungry' process, designed around the evidence available for birds, but it is simply not possible to replicate this approach for most other taxa, for which our knowledge is much poorer. This leaves birds as an exception to the growing practice of conducting national (usually for Great Britain, although sometimes for Britain and Ireland and occasionally for individual nations) Red List assessments using IUCN criteria (IUCN

2012). Burns *et al.* (2013) found British Red List assessments for 6,225 species of wildlife, but in the two years since then new assessments have been published, or are near publication, for many groups. It may be that while maintaining the series of BoCC assessments we also need to consider a national IUCN Red List assessment for birds, to enable a level playing field when assessing conservation priorities across all of the UK's biodiversity. We do, however, retain reservations about the regional IUCN Red Listing process, and the suitability of assessments focused on extinction risk alone for conservation prioritisation and action in the UK (see Eaton *et al.* 2005).

At present, BoCC and other priority-listing approaches are based solely on the current status of species, and give no consideration of likely future changes. We know that our environment is undergoing rapid changes, which will affect our bird populations for better or worse. For example, Huntley *et al.* (2007) used climate envelope modelling to show how the ranges of European breeding species were likely to move north and east in response to climate change by the late twenty-first century. As a consequence, we suspect that conditions in the UK might become more favourable for some

species, but less favourable for others. Ausden *et al.* (2015) predicted which species are likely to be gained and lost as breeding species in the UK, forecasting the arrival of Short-toed Eagle *Circaetus gallicus* and Melodious Warbler *Hippolais polyglotta* among others, but also the climate-driven loss of breeding species such as Common Scoter *Melanitta nigra* and Pintail. This prompts the question of whether our priority setting should consider predicted future change, although it is not immediately clear how those predicted changes should be treated. Should we list species that have yet to begin breeding in the UK, to help ensure that we are ready for them when they do? After all, conserving those species for which lower latitudes are becoming less suitable is likely to become increasingly important.

The BoCC Red list is now lengthy, and contains a spread of species for which we have varying conservation concern. Some are considered to be under the threat of extinction globally, or are undergoing dramatic declines here that may lead to extinction in the UK – Willow Tit, Turtle Dove and Capercaillie, to name just three of the 19 species suggested as being at high risk of UK extinction by Ausden *et al.* (2015). Other Red-listed species, while still much-depleted from



Edmund Fellowes/BTO

431. The Green Woodpecker *Picus viridis* is one of 22 species moving from Amber to Green, reflecting its improved status in Europe.

previous levels, have shown stable or even increasing trends in recent years, for example Song Thrush *Turdus philomelos*.

This fourth BoCC assessment now sits within the six-year cycle of reporting to the European Commission, and we anticipate future BoCC reviews remaining so. A timetable for EU reporting requirements, the production of new UK population estimates by APEP, and new European Red List assessments should enable us to produce the fifth BoCC in 2021. In the intervening period, it is vital that we maintain the monitoring programmes that BoCC relies upon, and continue to work with and support the UK's many thousands of dedicated birdwatchers to improve our evidence base. As mentioned previously, gaps in data remain, and while we are enduring lean times for the funding of conservation activities, we should strive to find efficient and imaginative ways of improving our monitoring to ensure that species do not slip through the net. Most importantly, we argue that there should be no let-up in our conservation action for the species most in need of it.

Acknowledgments

We would like to thank the many colleagues who have helped with access to data and provided advice during the assessment process, including Ian Burfield, Christina Ieronymidou and Rob Pople at BirdLife International, Dawn Balmer, Simon Gillings, Chas Holt and Dario Massimino at the BTO, Daniel Hayhow and Simon Wotton at the RSPB, Dave Baines (GWCT), Roddy Mavor and Matt Parsons (JNCC), Mark Holling (RBBP) and Digger Jackson. Moreover, we wish to acknowledge and thank the thousands of volunteers partaking in study groups, conducting surveys as part of formal monitoring schemes and submitting records through other channels; without their efforts this assessment, and the value it provides for conservation in the UK, would not be possible.

References

- Aebischer, N. J., Evans, A. D., Grice, P. V., & Vickery, J. A. 2000. *Ecology and Conservation of Lowland Farmland Birds*. BOU, Tring.
- Ausden, M., Bradbury, R., Brown, A., Eaton, M., Lock, L., & Pearce-Higgins, J. 2015. Climate change and Britain's birdlife: what might we expect? *Brit. Wildlife* 26: 161–174.
- Balmer, D. E., Gillings, S., Caffrey, B. J., Swann, R. L., Downie, I. S., & Fuller, R. J. 2013. *Bird Atlas 2007–11: the breeding and wintering birds of Britain and Ireland*. BTO Books, Thetford.
- Batten, L. A., Bibby, C. J., Clement, P., Elliott, G. D., & Porter, R. F. 1990. *Red Data Birds in Britain*. Poyser, London.
- BirdLife International. 2004. *Birds in Europe: population estimates, trends and conservation status*. BirdLife International, Cambridge.
- . 2015. *European Red List of Birds*. Office for Official Publications of the European Communities, Luxembourg.
- British Ornithologists' Union (BOU). 2008. Records Committee: 36th Report. *Ibis* 150: 218–220.
- . 2013. *The British List: A Checklist of Birds of Britain*. (8th edition). *Ibis* 155: 635–676.
- Broughton, R. K. 2009. Separation of Willow Tit and Marsh Tit in Britain: a review. *Brit. Birds* 102: 604–616.
- Brown, D., Wilson, J., Douglas, D., Thompson, P., Foster, S., McCulloch, N., Phillips, J., Stroud, D., Whitehead, S., Crockford, N., & Sheldon, R. 2015. The Eurasian Curlew – the most pressing bird conservation priority in the UK? *Brit. Birds* 108: 660–668.
- Burns, F., Eaton, M. A., Gregory, R. D., Al Fulaij, N., August, T. A., Biggs, J., Bladwell, S., Brereton, T., Brooks, D. R., Clubbe, C., Dawson, J., Dunn, E., Edwards, B., Falk, S. J., Gent, T., Gibbons, D. W., Gurney, M., Haysom, K. A., Henshaw, S., Hodgetts, N. G., Isaac, N. J. B., McLaughlin, M., Musgrove, A. J., Noble, D. G., O'Mahony, E., Pacheco, M., Roy, D. B., Sears, J., Shardlow, M., Stringer, C., Taylor, A., Thompson, P., Walker, K. J., Walton, P., Willing, M. J., Wilson, J., & Wynde, R. 2013. *State of Nature Report. The State of Nature partnership*.
- Butchart, S. H. M., Stattersfield, A. J., Baillie, J., Bennun, L. A., Stuart, S. N., Akçakaya, H. R., Hilton-Taylor, C., & Mace, G. M. 2005. Using Red List indices to measure progress towards the 2010 target and beyond. *Phil. Trans. Royal Soc. B* 360: 255–268.
- Cramp, S., Bourne, W. R. P., & Saunders, D. 1974. *The Seabirds of Britain and Ireland*. Collins, London.
- Defra. 2014. UK Biodiversity Indicators 2014. <http://jncc.defra.gov.uk/pdf/UKBI2014.pdf>
- Eaton, M. A., Gregory, R. D., Noble, D. G., Robinson, J. A., Hughes, J., Procter, D., Brown, A. F., & Gibbons, D. W. 2005. Regional IUCN Red Listing: the process as applied to birds in the United Kingdom. *Cons. Biol.* 19: 1557–1570.
- . Brown, A. F., Noble, D. G., Musgrove, A. J., Hearn, R. D., Aebischer, N. J., Gibbons, D. W., Evans, A., & Gregory, R. D. 2009. Birds of Conservation Concern 3: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. *Brit. Birds* 102: 296–341.
- European Commission. 2015. *The State of Nature in the European Union. Report on the status of and trends for habitat types and species covered by the Birds and Habitats Directives for the 2007–2012 period as required under Article 17 of the Habitats Directive and Article 12 of the Birds Directive*. European Commission, Brussels.
- Frederiksen, M., Edwards, M., Mavor, R. A., & Wanless, S. 2007. Regional and annual variation in Black-legged Kittiwake breeding productivity is related to sea surface temperature. *Marine Ecology Progress Series* 350: 137–143.
- Fuller, R. J., Noble, D. G., Smith, K. W., & Vanhinsbergh, D. 2005. Recent declines in populations of woodland birds in Britain: a review of possible causes. *Brit. Birds* 98: 116–143.
- Gibbons, D. W., Reid, J. B., & Chapman, R. A. 1993. *The New Atlas of Breeding Birds in Britain and Ireland*.

- 1988–1991. Poyser, London.
- , Avery, M. I., & Brown, A. F. 1996a. Population trends of breeding birds in the United Kingdom since 1800. *Brit. Birds* 89: 291–305.
- , Baillie, S. R., Gregory, R. D., Kirby, J., Porter, R. F., Tucker, G. M., & Williams, G. 1996b. Bird species of conservation concern in the United Kingdom, Channel Islands and Isle of Man: revising the Red Data List. *RSPB Conservation Review* 10: 7–18.
- Gregory, R. D., Wilkinson, N. I., Noble, D. G., Robinson, J. A., Brown, A. F., Hughes, J., Procter, D., Gibbons, D. W., & Galbraith, C. A. 2002. The population status of birds in the United Kingdom, Channel Islands and Isle of Man: an analysis of conservation concern 2002–2007. *Brit. Birds* 95: 410–448.
- Harris, S. J., Massimino, D., Newson, S. E., Eaton, M. A., Balmer, D. E., Noble, D. G., Musgrove, A. J., Gillings, S., Procter, D., & Pearce-Higgins, J. W. 2015. *The Breeding Bird Survey 2014*. BTO Research Report 673. BTO, Thetford.
- Hayhow, D. B., Ewing, S., Baxter, A., Douse, A., Stanbury, A., Whitfield, D. P., & Eaton, M. A. 2015. Changes in the abundance and distribution of a montane specialist bird, the Dotterel *Charadrius morinellus*, in the UK over 25 years. *Bird Study* 62: doi: 10.1080/00063657.2015.1054145
- , Conway, G., Eaton, M. A., Grice, P. V., Hall, C., Holt, C. A., Kuepfer, A., Noble, D. G., Oppel, S., Risely, K., Stringer, C., Stroud, D. A., Wilkinson, N., & Wotton, S. 2014. *The State of the UK's Birds*. RSPB, BTO, WWT, JNCC, NE, NIEA, NRW & SNH. Sandy, Bedfordshire.
- Heath, M. F., & Evans, M. I. (eds.). 2000. *Important Bird Areas in Europe: priority sites for conservation. 1: Northern Europe*. BirdLife International, Cambridge.
- Hoekstra, A. Y., & Wiedmann, T. O. 2014. Humanity's unsustainable environmental footprint. *Science* 344: 1114–1117.
- Holling, M., & the Rare Breeding Birds Panel. 2014. *Rare Breeding Birds in the United Kingdom in 2012*. *Brit. Birds* 107: 504–560.
- Holloway, S. 1996. *The Historical Atlas of Breeding Birds of Britain and Ireland: 1875–1900*. Poyser, London.
- Holt, C. A., Austin, G. E., Calbrade, N. A., Mellan, H. J., Hearn, R. D., Stroud, D. A., Wotton, S. R., & Musgrove, A. J. 2015. *Waterbirds in the UK in 2013/14: The Wetland Bird Survey*. BTO, RSPB & JNCC, in association with the WWT, BTO, Thetford.
- del Hoyo, J., & Collar, N. J. 2014. *Illustrated Checklist of the Birds of the World. Volume 1: Non-passerines*. Lynx Edicions, Barcelona.
- Huntley, B., Green, R. E., Collingham, Y. C., & Willis, S. G. 2007. *A Climatic Atlas of European Breeding Birds*. Durham University, RSPB and Lynx Edicions, Barcelona.
- IUCN. 2012. *Guidelines for Application of IUCN Red List Criteria at Regional and National Levels: Version 4.0*. IUCN, Gland, Switzerland & Cambridge, UK.
- Johnson, J. A., Watson, R. T., & Mindell, D. P. 2005. Prioritizing species conservation: does the Cape Verde Kite exist? *Proc. Royal Soc. B*: 272: 1365–1371; doi: 10.1098/rspb.2005.3098
- Lack, P. C. 1986. *The Atlas of Wintering Birds in Britain and Ireland*. Poyser, London.
- Lawson, B., Robinson, R. A., Colville, K. M., Peck, K. M., Chantrey, J., Pennycott, T. V., Simpson, V. R., Toms, M. P., & Cunningham, A. A. 2012. The emergence and spread of finch trichomonosis in the British Isles. *Phil. Trans. Royal Soc. B*: 367: 2852–2863.
- Lloyd, C., Tasker, M. L., & Partridge, K. 1991. *The Status of Seabirds in Britain and Ireland*. Poyser, London.
- Mitchell, P. I., Newton, S., Ratcliffe, N., & Dunn, T. E. 2004. *Seabird Populations of Britain and Ireland*. Poyser, London.
- Musgrove, A. J., Aebischer, N. J., Eaton, M. A., Hearn, R. D., Newson, S. E., Noble, D. G., Parson, M., Risely, K., & Stroud, D. A. 2013. Population estimates of birds in Great Britain and the United Kingdom. *Brit. Birds* 106: 64–100.
- Pearce-Higgins, J. W. 2013. Evidence of climate change impacts on populations using long-term datasets: Technical Paper 7. *Terrestrial Biodiversity Climate Change Report Card*. LWEC, Norwich.
- Sharrock, J. T. R. 1976. *The Atlas of Breeding Birds in Britain and Ireland*. Poyser, Berkhamsted.
- Stroud, D. A., Chambers, D., Cook, S., Buxton, N., Fraser, B., Clement, P., Lewis, P., McLean, I., Baker, H., & Whitehead, S. 2001. *The UK SPA Network: its scope and content. Vol. 2: Species accounts*. JNCC, Peterborough.
- , Bainbridge, I., Maddock, A., Anthony, S., Buxton, N., Chambers, D., Enlander, I., Hearn, R., Jennings, K., Wilson, J., & Whitehead, S. (eds.). In prep. *The Status of UK SPAs in the 2000s: the third network review*. JNCC, Peterborough.
- Tucker, G. M., & Heath, M. F. 1994. *Birds in Europe: their conservation status*. BirdLife International, Cambridge.
- Vickery, J. A., Ewing, S. R., Smith, K. W., Pain, D. J., Barlein, F., Skorpilova, J., & Gregory, R. D. 2014. The decline of Afro-Palearctic migrants and an assessment of potential causes. *Ibis* 156: 1–22.
- Wetlands International. 2015. *Waterbird Population Estimates*. Retrieved from <http://wpe.wetlands.org>
- White, S., & Kehoe, C. 2015a. Report on scarce migrant birds in Britain in 2011–12: part 1, non-passerines. *Brit. Birds* 108: 126–157.
- & — 2015b. Report on scarce migrant birds in Britain in 2011–12: part 2, passerines. *Brit. Birds* 108: 192–219.
- Whitfield, D. P., Fielding, A. H., Mcleod, D. R., Morton, K., Stirling-Aird, P., & Eaton, M. A. 2007. Factors constraining the distribution of Golden Eagles *Aquila chrysaetos* in Scotland. *Bird Study* 54: 199–211.

Mark A. Eaton, Leigh Lock and Richard D. Gregory, *The RSPB Centre for Conservation Science, The Lodge, Sandy, Bedfordshire SG19 2DL; e-mail Mark.Eaton@rspb.org.uk*
 Nicholas J. Aebischer, *Game & Wildlife Conservation Trust, Fordingbridge, Hampshire SP6 1EF*
 Andy F. Brown, *Natural England, Northminster House, Peterborough PE1 1UA*
 Richard D. Hearn, *WWT, Slimbridge, Gloucestershire GL2 7BT*
 Andy J. Musgrove and David G. Noble, *BTO, The Nunnery, Thetford, Norfolk IP24 2PU*
 David A. Stroud, *JNCC, Monkstone House, City Road, Peterborough PE1 1JY*

Short paper

The Bearded Tit in the UK: conservation and management issues

Abstract In February 2015, a symposium in Suffolk discussed the current status, monitoring methods and implications of reedbed management for the Bearded Tit *Panurus biarmicus* in the UK. This short paper presents an overview of some aspects of this discussion and highlights the need for collaboration and communication among workers at different sites.

The Bearded Tit *Panurus biarmicus*, found throughout much of temperate Eurasia, is categorised by the IUCN as a species of Least Concern (www.iucnredlist.org). Yet the fact that it is a reedbed specialist means that across most of that range the population is localised and fragmented. In the UK, it was Amber-listed by the third 'Birds of Conservation Concern' (BoCC) review, owing to a combination of localisation and population decline, but was moved to the Green list in BoCC4 (Eaton *et al.* 2009, 2015). In fact, the available evidence suggests that Bearded Tits are more than holding their own in the UK. *Bird Atlas 2007–11* showed a 32% range expansion since the 1988–91 atlas, a pattern which included a return to Wales, an expansion in southwest England and the colonisation of Scotland (Balmer *et al.* 2013). Newly created or enlarged reedbeds in some areas (notably East Anglia, Somerset and Yorkshire) have been colonised, yet the species is prone to the effects of hard winters. Its habitat requirements also limit any conservation efforts to a finite number of sites throughout the UK, emphasising the importance of adequate monitoring and management at those sites. In February 2015, a symposium to discuss the current status of the Bearded Tit in the UK was hosted by Stanny Field Centre, in Suffolk. The discussion covered the most important current threats to the species, appropriate monitoring methods at key sites, and an array of different reedbed management strategies and their implications for Bearded Tits. This paper summarises the discussion and outcomes of that symposium.

Present and future threats

The most important threat to Bearded Tits is

habitat loss. Reedbed is essentially a temporary habitat, an intermediate stage of succession between aquatic vegetation and scrubland. During the past two centuries, drainage schemes and water extraction have led to a decline in the natural formation of new reedbeds to replace sites that have dried out (Bibby & Lunn 1982; Everett 1989). As a result, much effort in recent decades has been given to the preservation of existing reedbeds and, more recently, the expansion of existing sites and creation of new ones. The majority of sites holding Bearded Tits are in east and southeast England, with two-thirds of the 2013 total accounted for by Kent, Norfolk, Suffolk and Yorkshire (Holling *et al.* 2015). Many of these sites are coastal, and face an imminent threat from coastal inundation (IPCC 2007). The creation of new reedbeds, especially at inland freshwater sites, may be the most effective way to combat the threat of habitat loss to reedbed specialists. Large-scale projects such as the National Trust's 100 year 'Wicken Fen Vision' (www.nationaltrust.org.uk/wicken-fen) will be vital for the long-term stability of birds such as the Bearded Tit.

Climate change may have direct consequences for Bearded Tits. Most models predict an increase in the frequency of extreme weather events such as flooding, which can block access to the reedbed's leaf-litter layer. This is the main winter foraging habitat for Bearded Tits, and flooding can cause high overwinter mortality (Wilson & Peach 2006). Prolonged periods of severe cold also affect Bearded Tits in winter, and their general vulnerability to adverse conditions in winter has been a primary reason for the major population fluctuations recorded at many UK sites (and elsewhere – see van Turnhout *et al.* 2010). For example, at

Walberswick, in Suffolk, numbers have fluctuated between 100 and 10 breeding pairs in the space of a few years, while similarly large crashes have been recorded at the Tay reedbeds in Perth & Kinross (fig. 1), Leighton Moss (Lancashire & North Merseyside) and Minsmere (Suffolk). The recovery from a hard winter can be rapid, however; Bearded Tits can begin breeding in March, and, when conditions permit, have several broods through the season (Cramp & Perrins 1993). Yet a series of extreme winters may limit the ability to recover and is perhaps a threat to the wider population.

Although a warming climate may allow more generalist species to expand their ranges northwards, the Bearded Tit is limited by the availability of suitable habitat. Discussion at the Suffolk symposium revealed that in UK Bearded Tit populations with a long run of data, the number of long-distance

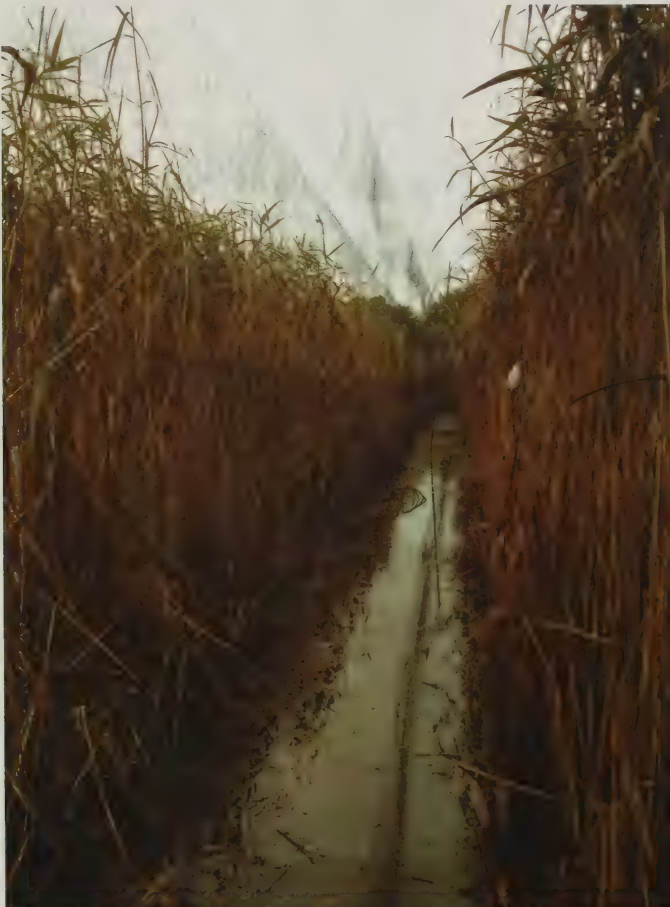
ringing controls has decreased since the 1970s, and that our birds now appear more sedentary. If long-distance movements are driven by harsh winters or other climatic factors (Surmacki & Stępniewski 2003; Surmacki & Stępniewski 2007), the reduction in long-distance recoveries may indicate that such factors are currently less important than 30–40 years ago.

Monitoring methods for Bearded Tits

Recognising changes in patterns of distribution and abundance is essential when aiming to mitigate current threats, and in turn this requires adequate monitoring at key sites. Nationally, the Rare Breeding Birds Panel (RBBP) publishes the most accurate estimates of Bearded Tits in the UK. The most recent report suggested an average of 533 breeding pairs for the five years up to and

including 2013, with a peak of 718 pairs in 2010 (Holling *et al.* 2015). The RBBP data are collated from counts at around 60 sites throughout the UK and their accuracy is dependent on the annual submission of counts from as many breeding sites as possible. Achieving good coverage from all the key sites is perhaps the most important issue for Bearded Tit monitoring, and overcoming problems of limited accessibility to sites and the effect that timing of counts may have on the results are key considerations.

In the UK, there is around 60 km² of reedbed habitat. The vast majority of reedbeds are less than 0.2 km² in extent but there is wide variation in size and structure (Hawke & Jose 1996). That structural variation drives the first major difficulty in designing consistent and effective monitoring methods for



432. Mist-nets erected in a relatively accessible area of the Tay reedbeds, Perth & Kinross, October 2013.

Bearded Tits. The variation in accessibility to reedbeds means that several sites will not have adequate spatial coverage during monitoring. Traditional sampling involves point-count or line-transect methods, which are generally successful in small reedbeds and/or when observations can be made from an elevated position (Poulin *et al.* 2000; Surmacki & Stepniewski 2003). In some cases, these methods may still be appropriate for larger reedbeds. (Beemster *et al.*

2010): for example, at both Minsmere and Walberswick, pathways, raised bunds and bird hides allow a network of accessible points throughout the reedbed. When visited several times throughout the breeding season, these allow the identification of breeding pairs and nesting sites. Elsewhere, for example in the Norfolk Broads and at Easton in Suffolk, carefully timed counts from a punt or canoe of newly fledged first broods as they emerge onto the edges of meres or canals has proved a useful means of assessment. However, such methods are not always feasible, and at many of the largest sites achieving good coverage is difficult.

Survey timing is another key aspect, since the detectability of Bearded Tits can vary considerably throughout the breeding season. When incubating, the birds are typically elusive, since they nest close to the ground in dense areas of reed. For example, surveys carried out when birds are incubating result in far fewer contacts than those when the adults are provisioning chicks. Surveys 'mistimed' by just a few days could severely underestimate numbers and this greatly hampers comparisons between years. The problem of timing is accentuated by the tendency of Bearded Tits to begin breeding early when conditions allow, which translates into considerable variation in first laying dates. An intensive survey design, where observations are repeated several times throughout the season, could mitigate the

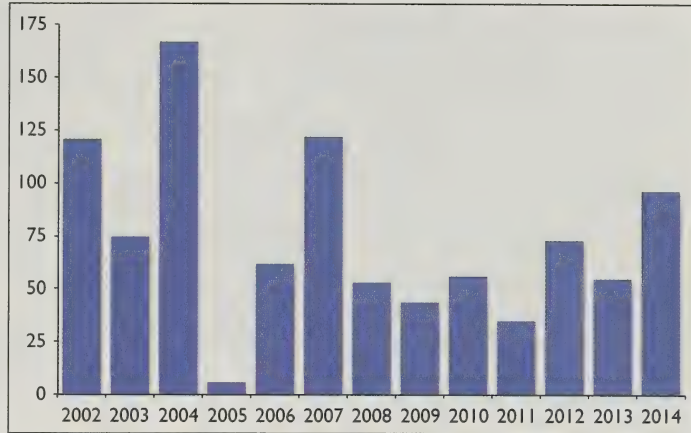


Fig. 1. The number of different adult Bearded Tits caught by the Tay Ringing Group during regular breeding-season ringing sessions at the Tay reedbeds, Perth & Kinross. Low numbers in 2005 and 2011 may be related to winter survival or the occasional irruptive movements undertaken by this species.

problems of timing, but combining surveys with data on breeding condition, collected during ringing, is preferable where possible.

Ringing is perhaps the most effective means by which to survey Bearded Tits in large reedbeds (Peach 2000; Poulin *et al.* 2000). Problems of accessibility may be overcome by siting nets in only the most accessible areas of the reedbed (plate 432). Changes in detectability through the breeding season have less impact on ringing, since netting sessions can last several hours, during which even incubating birds are likely to move a few times. In addition, the systematic use of tape lures can also be used to catch a high proportion of the birds in a given area of reeds. When ringing effort is consistent, a simple comparison of ringing totals is still a good indicator of population levels (fig. 1). However, more sophisticated analyses allow estimates of population size and survival rates using capture–recapture methods. These methods have been especially valuable in large reedbeds such as the Tay where members of the Tay Ringing Group invest much effort to catch Bearded Tits throughout the breeding season (Peach 2000; Hatton 2008); no fewer than 764 new birds were caught during 2014.

In addition, ringing data provide detailed information on a wide range of aspects of breeding ecology, including individual condition and moult as well as movements. For example, the 'beard' length of Bearded Tits



433. Bearded Tit *Panurus biarmicus* at the entrance to a reed nestbox, Leighton Moss.

has been reported as being a marker of male condition on which females base their mate choice (Hoi & Griggio 2008); while the subtle changes in the eye colour of juveniles can allow an estimate of fledging dates (Pearson 1975; Wilson & Hartley 2007) or, potentially, inference of population origins (Pearson 1966).

At Leighton Moss, several of these monitoring methods are combined into a successful long-term strategy. This is the largest reedbed in northern England, with an area of around 0.79 km² of reed, which supports up to 65 breeding pairs of Bearded Tits (Wilson 1993). A consistent programme of year-round ringing effort is combined with a colour-ringing programme and the provision of artificial reed 'nestboxes' (Wilson 2005; plate 433; see also www.youtube.com/watch?v=FBhy2DL4N3g). During the winter, grit provisioning sites facilitate many resightings (Wilson 2014). The consistency in approach to monitoring has allowed the identification of key factors which may limit the population success of Bearded Tits at this particular site, such as winter flooding (Wilson & Peach 2006).

There is no single, easy solution to improve wide-scale monitoring of Bearded Tits. In general, survey techniques are more

complex at larger sites and the impact of potential year-to-year variations which relate to survey effort rather than real changes should be borne in mind when interpreting national estimates, such as the RBBP totals. While large sites inevitably contain the majority of the national population, the use by Bearded Tits of small, fragmented reedbeds is also important – and there is a role here for the wider birdwatching community in monitoring the colonisation and abandonment of such sites, to show how this relates to the wider population trend.

Reedbed management

Monitoring methods also tell us much about the implications of reedbed management for Bearded Tits. There are two main aims of reedbed management: to maintain the long-term integrity of the reedbed by impeding succession; and to encourage structural heterogeneity within the reedbed, to maintain a variety of resources. Reedbed management is normally undertaken in two ways: by controlling water levels and by cutting the reeds (Bibby & Lunn 1982; Hawke & Jose 1996).

By comparing aspects of the local habitat between different sites and how these change with management, some consistent patterns (in terms of consequences for Bearded Tits)

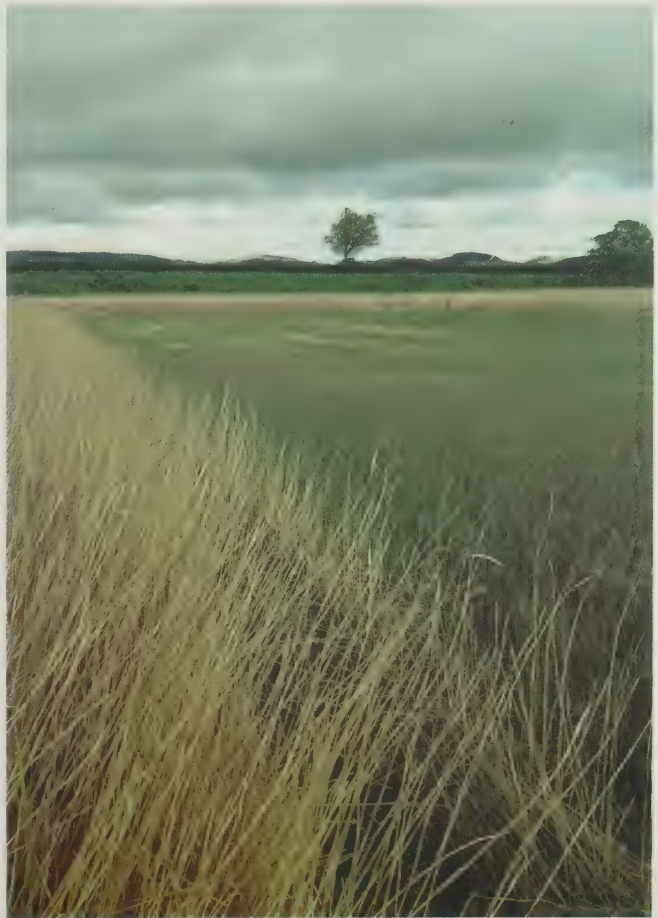
emerge across a wide variety of sites. Bearded Tits invariably prefer nesting within dry areas of reedbed, with high levels of leaf litter (Bibby 1981; Bibby & Lunn 1982; Beemster *et al.* 2010). For example, in a small reedbed at Farlington Marshes, in Hampshire, breeding Bearded Tits shifted their nesting sites between years to the driest areas of the reedbed as the water distribution changed. Dry areas are normally old, mature, unmanaged patches of reed and provide thick, often staggered reed stems to act as nest foundations (Hoi 1989). These dense and impenetrable areas presumably offer effective protection from predation (Báldi & Batáry 2000; Batáry *et al.* 2004).

Observations have shown parental foraging flights of up to 500 m in reedbeds throughout Europe (Poulin *et al.* 2000; Beemster *et al.* 2010). At UK sites, summer foraging was consistently in wetter areas of the reedbed, which offer high invertebrate abundance (Bibby & Lunn 1982; Hawke & Jose 1996). Thus, at its simplest, management that maintains both old reed patches and wet areas is good for breeding Bearded Tits. In addition, Beemster *et al.* (2010) showed the importance of early stage reed growth created by grazing herbivores for foraging Bearded Tits and suggested that visual foraging cues are more obvious in such patches. Winter reed cutting can simulate reed growth in a similar manner, by removing blocks of reed that begin to grow back over spring (plate 434). Valkama *et al.* (2008) showed that cut sites tend to grow back more densely, to a lower height with a smaller stem diameter and less leaf litter than old, uncut patches. Again, creating complexity at cut sites may help to offer a greater variety of foraging patches.

The effects of reedbed management on invertebrate

abundance are less clear. While several studies have found increased abundance in cut patches (e.g. Poulin & Lefebvre 2002, Beemster *et al.* 2010), Valkama *et al.* (2008) found the effects to be variable across sites, management methods and invertebrate species. Recently, studies have shown a more consistent increase in invertebrate abundances in reedbeds cut in a mosaic pattern (Poulin & Lefebvre 2002; Schmidt *et al.* 2005; Beemster *et al.* 2010; Trnka *et al.* 2014). Since most managed reedbeds in the UK are cut to assist conservation rather than for commercial gain, most reed management plans here already aim to achieve a mosaic pattern with structural heterogeneity.

While there is general agreement that reedbed heterogeneity benefits foraging Bearded Tits, reed cutting can have some adverse consequences. For example, in the



Iain Malzer

434. A block of reed cut in January 2014 on the Tay reedbed, Perth & Kinross; photographed in May 2014 as new growth becomes evident.

Tay reedbeds, predation rates of artificial nests at the edges of cut areas change throughout the breeding season, with early season nests being most heavily predated; and this may be explained by ease of access in cut areas (Malzer & Helm 2015). In addition, while higher seed indexes have been reported in new growth at recently grazed sites (Beemster *et al.* 2010), these are based on seed panicles, which are a less important winter foraging resource than a deep, seed-filled, leaf litter for Bearded Tits (Wawrzyniak & Sohns 1986).

Conclusions

The nature of their reedbed habitat means that extra effort is needed for effective monitoring of Bearded Tit populations. The collaboration between workers at different sites, sharing ideas and techniques, is especially valuable, since a single monitoring method is unlikely to be applicable to all sites. While appropriate reed management strategies are also highly site specific, there are some broad guidelines that hold true across all sites, and it is encouraging that reedbed management in the UK is moving in a direction compatible with the requirements of Bearded Tits, at least in providing heterogeneity throughout the reedbed. More information about the breeding biology and the changing seasonal requirements is needed to improve our understanding, however.

A more collaborative approach could actively benefit the conservation of Bearded Tits in the UK, and so as a result of the Suffolk symposium a Bearded Tit forum has been set up at www.groups.yahoo.com/group/reedling (to subscribe to the mailing list, send a blank e-mail to reedling-subscribe@yahoogroups.com). This offers a forum for communication and in particular facilitates the possibility for ringers to compare and standardise their methods. Another key function is to allow interested members of the wider birding community to become more involved, especially through regular checking of smaller reedbed sites. Submission of records to BirdTrack, with appropriate breeding evidence codes, is an obvious first step. By pulling together the experiences from many different and varied sites, the forum will allow more informed

and decisive long-term conservation efforts.

Acknowledgments

We would like to thank Stanny Farm Field Centre for providing excellent facilities during the symposium, and Paul and Louise Cooke, Margaret Grenham, Mervyn Miller and Mike Pratt in particular. We thank all attendees for offering valuable contributions and stimulating discussion. We are grateful to David Pearson, Roger Riddington and John Wilson for valuable assistance when preparing the manuscript.

References

- Báldi, A., & Batáry, P. 2000. Do predation rates of artificial nests differ between edge and interior reedbed habitats? *Acta Ornithologica* 35: 53–56.
- Balmer, D. E., Gillings, S., Caffrey, B. J., Swann, R. L., Downie, I. S., & Fuller, R. J. 2013. *Bird Atlas 2007–11: the breeding and wintering birds of Britain and Ireland*. BTO Books, Thetford.
- Batáry, P., Winkler, H., & Báldi, A. 2004. Experiments with artificial nests on predation in reed habitats. *J. Orn.* 145: 59–63.
- Beemster, N., Troost, E., & Platteeuw, M. 2010. Early successional stages of Reed, *Phragmites australis*, vegetation and its importance for the Bearded Tit *Panurus biarmicus* in Oostvaardersplassen, the Netherlands. *Ardea* 98: 339–354.
- Bibby, C. J. 1981. Food supply and diet of the Bearded Tit. *Bird Study* 28: 201–210.
- & Lunn, J. 1982. Conservation of reed beds and their avifauna in England and Wales. *Biol. Conserv.* 23: 167–186.
- Cramp, S., & Perrins, C. M. 1993. *The Birds of the Western Palearctic*. Vol. 7. OUP, Oxford.
- Eaton, M. A., Brown, A. F., Noble, D. G., Musgrove, A. J., Hearn, R. D., Aebischer, N. J., Gibbons, D. W., Evans, A., & Gregory, R. D. 2009. Birds of Conservation Concern 3: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. *Brit. Birds* 102: 296–341.
- , Aebischer, N. J., Brown, A. F., Hearn, R. D., Lock, L., Musgrove, A. J., Noble, D. G., Stroud, D. A., & Gregory, R. D. 2015. Birds of Conservation Concern 4: the population status of birds in the UK, Channel Islands and Isle of Man. *Brit. Birds* 108: 708–746.
- Everett, M. J. 1989. Reedbeds – a scarce habitat. *RSPB Conservation Review* 3: 14–19.
- Hatton, H. 2008. Bearded Tits and Reed Warblers in the Tay Reedbeds. *BTO RAS News* 9: 8–9.
- Hawke, C. J., & Jose, P. V. 1996. *Reedbed Management for Commercial and Wildlife Interests*. RSPB, Sandy.
- Hoi, H. 1989. Ökologie und Paarungssystem der Bartmeise (*Panurus biarmicus*). Unpublished PhD thesis, University of Vienna.
- & Griggio, M. 2008. Dual utility of a melanin-based ornament in Bearded Tits. *Ethology* 114: 1094–1100.
- Holling, M., & the Rare Breeding Birds Panel. 2015. Rare breeding birds in the United Kingdom in 2013. *Brit. Birds* 108: 373–422.
- IPCC. 2007. *Climate Change 2007 – the Physical Science Basis: Working Group I Contribution to the Fourth Assessment Report of the IPCC (Climate Change 2007)*. Cambridge University Press, Cambridge.
- Malzer, I., & Helm, B. 2015. The seasonal dynamics of

- artificial nest predation rates along edges in a mosaic managed reedbed. *PLoS One* 10(10), doi: 10.1371/journal.pone.0140247
- Peach, W. 2000. Minimum breeding population of Bearded Tits, on the Tay Reedbeds in 2000: an analysis of Tay Ringing Group mark-recapture data. RSPB Conservation Science, Sandy.
- Pearson, D. J. 1966. Observations on the iris colour of Bearded Tits. *Bird Study* 13: 328–331.
- 1975. Moults and its relation to eruptive activity in the Bearded Tit. *Bird Study* 22: 205–227.
- Poulin, B., & Lefebvre, G. 2002. Effect of winter cutting on the passerine breeding assemblage in French Mediterranean reedbeds. *Biodiversity and Conservation* 11: 1567–1581.
- , —, & Pilard, P. 2000. Quantifying the breeding assemblage of reedbed passerines with mist-net and point-count surveys. *J. Field Ornithol.* 71: 443–454.
- Schmidt, M. H., Lefebvre, G., Poulin, B., & Tschamtké, T. 2005. Reed cutting affects arthropod communities, potentially reducing food for passerine birds. *Biol. Conserv.* 121: 157–166.
- Surmacki, A., & Stępniewski, J. 2003. A survey of the Bearded Tit *Panurus biarmicus* during the non-breeding season in a landscape of western Poland. *Acta Ornithologica* 38: 53–58.
- & — 2007. Do weather conditions affect the dynamics of Bearded Tit *Panurus biarmicus* populations throughout the year? A case study from western Poland. *Annales Zoologici Fennici* 44: 35–42.
- Trnka, A., Peterková, V., Prokop, P., & Batáry, P. 2014. Management of reedbeds: mosaic reed cutting does not affect prey abundance and nest predation rate of reed passerine birds. *Wetlands Ecology and Management* 22: 227–234.
- Valkama, E., Lyytinen, S., & Koricheva, J. 2008. The impact of reed management on wildlife: a meta-analytical review of European studies. *Biol. Conserv.* 141: 364–374.
- van Turnhout, C. A. M., Hagemeyer, E. J. M., & Foppen, R. P. B. 2010. Long-term population developments in typical marshland birds in the Netherlands. *Ardea* 98: 283–299.
- Wawrzyniak, H., & Sohns, G. 1986. *Die Bartmeise*. A. Ziemseu Verlag, Wittenberg Lutherstadt.
- Wilson, J. 1993. Colonisation by Bearded Tits of Leighton Moss, Lancashire. *Brit. Birds* 86: 352–358.
- 2005. Nest box provision to provide additional nesting sites for Bearded Tits *Panurus biarmicus* at Leighton Moss RSPB Reserve, Lancashire, England. *Conservation Evidence* 2: 30–32.
- 2014. The gritting behaviour of Bearded Tits *Panurus biarmicus*. *Ring. & Migration* 29: 37–40.
- & Hartley, I. R. 2007. Changes in eye colour of juvenile Bearded Tits *Panurus biarmicus* and its use in determining breeding. *Ibis* 149: 407–411.
- & Peach, W. 2006. Impact of an exceptional winter flood on the population dynamics of Bearded Tits (*Panurus biarmicus*). *Animal Conservation* 9: 463–473.

Iain Malzer, IBAHCM, University of Glasgow, University Avenue, Glasgow G12 8QQ;

e-mail i.malzer.1@research.gla.ac.uk

Rodney West, Stanny Field Centre, Stanny House Farm, Iken, Suffolk IP12 2EY;

e-mail fieldcentre@stannyfarm.org



Robin Chittenden

435. Male Bearded Tit *Panurus biarmicus*, Norfolk, March 2015.

Canada Goose eggs hatching after prolonged immersion in tidal water

A pair of Canada Geese *Branta canadensis* has nested successfully on a small island on the scrape pool at Pickerings Pasture LNR, near Widnes, in Cheshire & Wirral, for several years. In 2015 we first noticed that a female was sitting on eggs on 9th April.

On 19th April there was a 10-m tide, which we knew would inundate the scrape pool and the nest. Once the tide had encroached into the pool, it came in very fast; in due course, the tide went completely over the nest, when the female simply floated away and was joined by the male. We left the site shortly after this point, before the tide was at its peak, but we understand that the nest was submerged for over half an hour, by at least half a metre of water.

We returned the following day, and were surprised to see that the female was still sitting and we saw her turning the eggs, although the nest had moved slightly to one side. There was another 10-m tide that day. Since there was less wind, the tide was slower to cover the nest, which was submerged for only about 25 minutes. This time the nest was vacated before the tide completely covered it. The night-time tides were slightly lower and we assume did not cover the nest.

The female continued to incubate into May and we were surprised to see that the

nest was successful; eight goslings were seen leaving the island on 9th May. No other geese used the pond during this period (the male was extremely aggressive to any other Canada Goose in the vicinity), so the same pair was involved throughout. They were seen feeding on the area between the scrape and the river during the next 24 hours, before the adults eventually took them onto Hale Marsh, where the majority of Canada Geese in the area congregate.

It seemed remarkable that any eggs would hatch after being underwater for so long. O'Connell *et al.* (2014) described their findings for a colony of Little Terns *Sternula albifrons* in Co. Wicklow in June 2014, where a number of nests with eggs were flooded. Of 13 nests inundated by an exceptionally high tide, ten were thought to have produced 20 fledglings.

Acknowledgment

Thanks to David Norman for his comments and for drawing attention to the published work on Little Terns.

Reference

- O'Connell, D. P., Power, A., Doyle, S., & Newton, S. F. 2014. Nest movement by Little Terns *Sternula albifrons* and Ringed Plovers *Charadrius hiaticula* in response to inundation by high tides. *Irish Birds* 10: 19–22.

Carol and Rob Cockbain, 14 Carlow Close, Hale Village, Liverpool L24 5RS;
e-mail carolrob2@btinternet.com

Editorial comment Malcolm Ogilvie commented that the eggs of waterfowl can withstand gaps in incubation, and the fact that they were under water during this time would not significantly affect their chances of hatching.

Jackdaw possibly using a twig as a tool

In late November 2014, my wife Sue and I were watching a group of around eight or nine Jackdaws *Corvus monedula* in our neighbour's Ash *Fraxinus excelsior* tree. They seemed to be pecking at the tops of various small branches, which we think were soft. Then one individual broke off a small twig

and used it to poke around into what appeared to be an area of rot in a larger branch. We did not observe whether it managed to obtain a meal.

The observation took place about 15.00 hrs on a clear, mild day. The twig that appeared to be used as a tool was quite small

(c. 5–6 cm and quite thin) and we watched the Jackdaw break it off and reduce it in length. It then seemed to try to push it into the top of a rotting branch; we could not see any clear outcome and it did not continue – and it dropped the twig after a little while. The area of rotting wood seemed to be on the upper surfaces of the branches, although the tree appeared free of Ash dieback disease. We watched the bird at a range of c. 15 m,

Reg Bingham, 26 Mountbatten Avenue, Yaxley, Cambridgeshire PE7 3NY;
e-mail reg.bingham@gmail.com

through 8× binoculars, from a first-floor window. The tree concerned is around 12–15 m high, in a conservation area and, together with an elm *Ulmus*, birch *Betula* and Field Maples *Acer campestre* in our garden, is the remnant of an old hedge, bordering an old orchard, but now houses.

Acknowledgment

Thanks to Julian Hughes for his comments and for encouraging submission of this note.

Common Chiffchaff bathing in the sea

On the Greek island of Amorgos, in the Cyclades, on 9th October 2013, I watched a Common Chiffchaff *Phylloscopus collybita* enter the sea on three separate occasions and bathe. The site was an inlet, Kato Kambos, with a sandy beach of very shallow slope, edged with tamarisk *Tamarix* trees out of which the bird came. It would fly down to the sea's edge, hop into the water up to its breast, duck its head underwater and flap vigorously splashing itself thoroughly with sea water. Amorgos is a very dry island in summer and autumn, and there are few places where freshwater bathing would be possible, and none near the site in question. Chiffchaffs are abundant on migration and as winter visitors on Amorgos (pers. obs. 2007–15), but despite a fair amount of time spent by the shore in almost four months on the island at different seasons, I have never seen sea bathing by any other landbird.

Avian bathing is little studied, and its

Anthony Cheke, 139 Hurst Street, Oxford OX4 1HE; e-mail anthony.cheke@dodobooks.com

function not fully understood (Brilot & Bateson 2012), but I have not found any reference to landbirds bathing in sea water. The only reviews of the subject (Slessers 1970; Stainton 1982) discussed only bathing in fresh water. Simmons's articles (1964, 1985) are more general and half devoted to waterbirds; salt- and fresh water are not distinguished, but there is no indication of landbirds using salt water.

References

- Brilot, B. O., & Bateson, M. 2012. Water bathing alters threat perception in Starlings. *Biol. Lett.* 11. doi:10.1098/rsbl.2011.1200
- Simmons, K. E. L. 1964. Feather maintenance. In: Thomson, A. L. (ed.), *A New Dictionary of Birds*, pp. 278–286. Thomas Nelson, London.
- 1985. Comfort behaviour. In: Campbell, B., & Lack, E. (eds.), *A Dictionary of Birds*, pp. 101–105. Poyser, Calton.
- Slessers, M. 1970. Bathing behaviour of landbirds. *Auk* 87: 91–99.
- Stainton, J. M. 1982. Timing of bathing, dusting and sunning. *Brit. Birds* 75: 65–86.

Dunnock ground-feeding through a covering of hail

At about 16.00 hrs on 29th January 2015, in my garden in Somerset, I saw a Dunnock *Prunella modularis* fly to a flat, concreted area where I had earlier scattered some oat flakes. This was soon after the end of a hailstorm and the ground was covered with hail to a depth of 1–1.5 cm, and the light was poor. The Dunnock fed rapidly from the oat flakes by displacing hailstones (some 2–3 mm in

diameter). After about two minutes, and just before the hailstones started to melt, the Dunnock flew off. I am unaware of any other reports in the literature of a Dunnock feeding in this manner following a hailstorm, and the behaviour was quite distinct from that of snow-tunnelling (see *Brit. Birds* 102: 468, 106: 555).

A. P. Radford, Crossways Cottage, West Bagborough, Somerset TA4 3EG

Reviews

A Less Green and Pleasant Land: our threatened wildlife

By Norman Maclean

Cambridge University Press, 2015

Pbk, 424pp; colour and black-and-white illustrations

ISBN 978-1-107-67323-6, £16.99

A foreword by Chris Packham sets the scene for this book, which amounts to a 'Domesday Book' of the British and Irish countryside. A countryside that is cherished. Norman Maclean was editor of the mammoth, highly successful *Silent Summer* (*Brit. Birds* 103: 738) and this book aims to present the contents of *Silent Summer* in a more concise and accessible format. And it does just that, enabling a much wider audience to be reached.

It is an essential textbook for students reading environmental and countryside courses, providing countless case studies of our 'doomed' wildlife and the tragic losses over recent decades. Maclean sets the scene well in each chapter, presenting the context to support his points and predictions. The reader is presented with digestible nuggets of information about many different issues. The book contains plenty of data and references yet Maclean writes in an accessible, reader-friendly style to keep his audience engaged and interested, avoiding the temptation to get too technical or to waffle. It is essentially a reference book, one that can be delved into as necessary, although it can just as well be read from cover to cover.

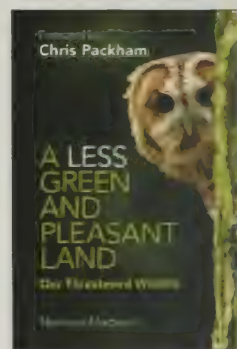
A huge amount is crammed into this book. Beginning with the earth's history, we journey through farming, species introductions, human overcrowding, freshwater availability and hunting, to conservation. The second 'half' of the book is an analysis of how our wildlife is faring. The challenges

for wildlife in the twenty-first century are complex, none more so than for migratory animals, which face different pressures in different parts of the globe.

Readers can learn a terrific amount from this book, as case studies and summaries of a multitude of issues are presented. And, perhaps most importantly, they may be inspired to help make a difference. Towards the end of the book, grounds for optimism are pointed out: town parks and gardens as wildlife havens, mutual benefits between field sports and wildlife conservation, the role of zoos and the role of the media, increasing public appreciation and awareness of wildlife issues. After presenting plenty of depressing facts, Maclean offers a list of 'what can be done to help' the countryside. It provides the reader with much-needed motivation to make a difference, to believe that the future of our countryside doesn't need to be all doom and gloom. There is hope, a greener and more pleasant land. But ultimately it is up to us.

This book deserves a place on the shelves of all of those who really care about the countryside and are concerned for its future. But equally, and perhaps more importantly, on the shelves of those who want to learn more about our countryside and how it works.

Ajay Tegala



The Lanner Falcon

By Giovanni Leonardi

Privately published, 2015

Pbk, 299pp; colour and black-and-white photos

No ISBN, €50.00

This volume is an updated version of the author's previous books on the Lanner Falcon *Falco biarmicus*, also published privately, in 1992 and 2001. It is attractively laid out and well organised, with maps, figures and tables used to good effect. There are black-and-white photographs throughout,

and two blocks of excellent colour photographs.

The Lanner Falcon has been less well studied than some of its close relatives and the author has done a good job in pulling together information from many diverse sources across its wide breeding range. I hadn't previously appreciated that it is

reasonably common and widespread across large parts of Africa, and is the most familiar large falcon in many African countries, including in some urban areas. In contrast, the population of the most northerly of the five subspecies is small and vulnerable, with just a few hundred pairs, thinly spread across a highly fragmented range in south-east Europe. It is a difficult bird to get to grips with in Europe and it seems there is much still to learn about its basic ecology, particularly away from its Italian (and especially Sicilian) stronghold.

The text is generally well written, bearing in mind that English is not the author's first language, though it is rather technical and jargon-heavy in some sections. Readers not familiar with the scientific terminology around genetic analysis, morphology and disease, for example, may wish to keep a dictionary to hand for these chapters. I got more enjoyment (and useful information) from the more accessible chapters covering distribution, breeding, movements, diet and hunting behaviour.

Interestingly, the Lanner exploits a broader range of habitats and prey types than the similar-sized Peregrine Falcon *F. peregrinus*, at least in Africa. It also uses a surprisingly diverse range of different hunting techniques, which are well described in the book and make fascinating reading.

The lack of an index was frustrating when trying to locate, or refer back to, specific pieces of information. I also felt that summaries would have been useful to provide an accessible overview of each chapter for those without the time or inclination to read through the entire text. Overall, I think this is a monograph that will serve primarily as a reference source for raptor aficionados rather than appealing particularly to a broader audience. It is, though, a valuable contribution to the literature and should help to encourage a greater interest in the ecology and conservation of this attractive and interesting falcon.

Ian Carter

The Moth Snowstorm: nature and joy

By Michael McCarthy

John Murray, 2015

Hbk, 262pp; no illustrations

ISBN 978-1-4447-9277-5, £20.00, **Wild Sounds price £17.99**

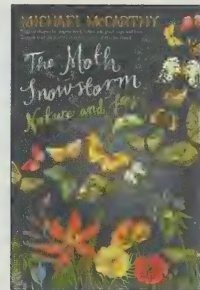
The title of this book might be lost on younger readers but those in middle age or beyond will remember the blizzard of moths, picked out by car headlights, on warm summer evenings in the countryside. This was taken for granted a few decades ago but it doesn't happen anymore and this book is, in part, a eulogy for all that has been lost through recent drastic declines in our wildlife. At the same time, it is a celebration of the wildlife and wild places that remain and a passionate argument for their defence – not, primarily, on the grounds of 'sustainable development' or to provide 'ecosystem services', which he argues are unlikely to succeed, but simply for the pure joy that the natural world can bring us.

Although it was butterflies that first sparked his interest in wildlife, birds feature prominently throughout. There are evocative descriptions of childhood visits to remote parts of the Dee Estuary (armed with *The Observer's Book of Birds*), and of his later experiences as a national journalist covering stories about declines in farmland birds, the demise of London's House Sparrows *Passer domesticus* and the loss of the moth snowstorm itself – the 'great thinning' as he calls it. Farther afield, there is the depressing tale of the Saemangeum

Estuary in South Korea, which he witnessed at first hand. Once three times the size of the Dee Estuary and a magnet for migrating waterbirds, it has now been consigned to history.

The author's views about the natural world have clearly been heavily influenced by his own experiences, including some challenging times when wildlife was a sustaining force in his life. While joy in the natural world is a recurring theme, there is certainly no shortage of sadness and anger. This is something of a delicate balancing act and whether the book's ultimately hopeful message can survive the sobering accounts of losses (and the knowledge that more are inevitable) will depend on the temperament, or even mood, of the reader. The book, I think, poses an interesting question. When thinking about the current state of the natural world, do you focus primarily on all the amazing wildlife that we have lost, or on all the amazing wildlife that we have yet to lose? Either way, this is a thoughtful, engaging and deeply moving book and is highly recommended.

Ian Carter



Recent reports

Compiled by Barry Nightingale and Harry Hussey

This summary of unchecked reports covers early October to early November 2015.

Headlines The two star birds came from opposite directions: a Wilson's Warbler in the Outer Hebrides (the second for Britain) and, potentially a first for Britain & Ireland, a Chestnut Bunting in Orkney. Shetland and Fair Isle notched up two White's Thrushes, a Siberian Rubythroat, single Pallas's Grasshopper, Lanceolated and Paddyfield Warblers and two Pechora Pipits. Farther afield there was a Chimney Swift in Ireland, a Brown Shrike, one or two Hudsonian Whimbrels, an Isabelline Wheatear and a Little Crake in southwest England, while seven Blyth's Reed Warblers, three Pied Wheatears and three Blyth's Pipits were widely scattered. Much attention was on Norfolk, where highlights of an excellent arrival were three Isabelline Shrikes and four Red-flanked Bluetails (with a staggering 11 elsewhere). Right at the end of this exciting period, the crooked spire in Chesterfield proved a magnet for a Crag Martin. In addition to the species mentioned below, good numbers of Rough-legged Buzzards *Buteo lagopus*, Firecrests *Regulus ignicapilla*, Ring Ouzels *Turdus torquatus* and Black Redstarts *Phoenicurus ochruros* arrived in the mainly easterly airflows.

Cackling Goose *Branta hutchinsii* Exe Estuary (Devon), long-stayer to 8th November; Islay (Argyll), 14th, 21st–31st October; West Freugh Airfield (Dumfries & Galloway), 3rd November. **American Wigeon** *Anas americana* Records from Argyll, Co. Donegal, Co. Leitrim, North-east Scotland, Orkney and Co. Wexford. **Ferruginous Duck** *Aythya nyroca* Records from Co. Durham and Hampshire. **Lesser Scaup** *Aythya affinis* Cardiff Bay (East Glamorgan), long-stayer to 3rd November; Lough Gill (Co. Kerry), 16th October to 5th November; Achill Island (Co. Mayo), 18th–19th October. **Black Scoter** *Melanitta americana* Rossbeigh (Co. Kerry), 10th–30th October. **Surf Scoter** *Melanitta perspicillata* Records from Angus & Dundee, Denbighshire (three), Co. Kerry and Lothian (two). **Buffle-head** *Bucephala albeola* Priory Country Park (Bedfordshire), 29th October. **White-billed Diver** *Gavia adamsii* Bluemull Sound (Shetland), 28th October and 6th November.

Squacco Heron *Ardeola ralloides* Nanjizal, 24th October; Skewjack (both Cornwall), 26th October. **Cattle Egret** *Bubulcus ibis* Records from Cornwall, Devon (three), Nottinghamshire, Shetland, Somerset (two) and Co. Wexford. **Purple Heron** *Ardea purpurea* Steart (Somerset), 14th October.

Black Kite *Milvus migrans* Kirkby-le-Soken (Essex), 8th October; Cove Brook (Kent), 17th October. 'Northern Harrier' *Circus*

cyaneus hudsonius North Ronaldsay (Orkney), long-stayer to 2nd November. **Pallid Harrier** *Circus macrourus* The Burgh (Sussex), long-stayer to 11th October; Loch of Stenness (Orkney), 9th–11th October; Isle of May, 10th and 12th October, perhaps same Holy Island (Northumberland), 12th October; Annagh Marsh (Co. Mayo), 19th–30th October; Spurn/Easington (Yorkshire), 25th October; Donna Nook, 27th–28th October, presumed same Gibraltar Point, 28th–29th October and 5th–7th November, also Freiston Shore (all Lincolnshire), 29th October.

Little Crake *Porzana parva* Slimbridge (Gloucestershire), 8th October. **American Golden Plover** *Pluvialis dominica* Records from Co. Cork (four), Cornwall, Co. Derry, Co. Donegal, Leicestershire & Rutland, Lothian, Co. Louth, Norfolk, Outer Hebrides, Shetland and Yorkshire (two). **Hudsonian Whimbrel** *Numenius hudsonicus* Tresco (Scilly), 15th–18th October; Marazion (Cornwall), 30th October to 8th November. **White-rumped Sandpiper** *Calidris fuscicollis* Records from Co. Cork, Co. Donegal, Hampshire, Co. Kerry (two), Norfolk, North-east Scotland and Northumberland. **Semi-palmated Sandpiper** *Calidris pusilla* Slimbridge, long-stayer intermittently to 6th November. **Spotted Sandpiper** *Actitis macularia* Tresco, 21st October; Chard Junction GP (Dorset), 25th–26th October. **Greater Yellowlegs** *Tringa melanoleuca* Whippingham

(Isle of Wight), long-stayer to 3rd November. **Lesser Yellowlegs** *Tringa flavipes* Clogheen Marsh (Co. Cork), long-stayer to 15th October; Tiree (Argyll), 21st–24th October; Breydon Water (Norfolk), 29th October to 8th November. **Marsh Sandpiper** *Tringa stagnatilis* Nanjizal, 9th October. **Long-billed Dowitcher** *Limnodromus scolopaceus* Pennington/Keyhaven Marshes (Hampshire), long-stayer to 2nd November; Rogerstown (Co. Dublin), 8th–9th November.

Gull-billed Tern *Gelochelidon nilotica* Blennerville (Co. Kerry), 17th October to 9th November. **White-winged Black Tern** *Chlidonias leucopterus* Records from Norfolk and Shropshire. **Forster's Tern** *Sterna forsteri* Nimmo's Pier, 24th October, then Doorus (both Co. Galway), 2nd November. **Bonaparte's Gull** *Chroicocephalus philadelphia* Long-stayers Dawlish Warren area (Devon), to 5th November; Lossiemouth (Moray & Nairn), to 15th October. **American Herring Gull** *Larus smithsonianus* St Just area, intermittently between 17th October and 4th November, also Mousehole (both Cornwall), 6th November.

Short-eared Owl *Asio flammeus* Widespread influx from mid October with a record count on Fair Isle, of 38 on 29th October; also 22 on North Ronaldsay on 28th October, 19 on Bardsey on 31st October. **Chimney Swift** *Chaetura pelagica* Mizen Head (Co. Cork), 26th October. **Alpine Swift** *Apus melba* Land's End, 10th–11th October, Porthgwarra, 11th October, St Levan (all Cornwall), 11th October; another, from a boat 8 km south of Plymouth (Devon), 10th October. **Pallid Swift** *Apus pallidus* Flamborough Head (Yorkshire); Newbiggin (Northumberland); Marsden and Whitburn (both Co. Durham), all 31st October; Boulby (Cleveland), 1st November; Glynneath (Gower), 5th–6th November; Chapel St Leonards (Lincolnshire), 6th November; Sizewell (Suffolk), 7th November. **Red-footed**

Falcon *Falco vespertinus* Spurn, 7th October; Minsmere (Suffolk), 8th October.

Brown Shrike *Lanius cristatus* Porthgwarra (Cornwall), 20th October. **Isabelline Shrike** *Lanius isabellinus* In Norfolk, at Beeston Common, 11th–19th October, Holkham, 14th–19th October, Mundesley, 15th October; South Huish Marshes (Devon), 14th–19th October. **Great Grey Shrike** *Lanius excubitor* Large influx from mid October, including about 100 during 14th–20th, with about 25 in Norfolk. **Goldcrest** *Regulus regulus* Large arrival from mid October along English east coast, including 1,000 Gibraltar Point and 1,430 Spurn on 11th.

Penduline Tit *Remiz pendulinus* Minsmere, two 18th, at least one to 29th October; Broom GP (Bedfordshire), two, 31st October to 2nd November; Southwold (Suffolk), 3rd November; St Olaves (Norfolk), 8th November. **Short-toed Lark** *Calandrella brachydactyla* St Mary's (Scilly), long-stayer to 27th October. **Crag Martin** *Ptyonoprogne rupestris* Chesterfield (Derbyshire), 8th–9th November.

Arctic Warbler *Phylloscopus borealis* Inishmore (Co. Galway), 11th October; St Mary's, 11th–12th October; Erris Head (Co. Mayo), 22nd–28th October; Marsden Quarry (Co. Durham), 2nd–7th November. **Hume's Warbler** *Phylloscopus humei* Teifi Marshes (Ceredigion), 9th October; Brancaster, 15th October, Wells Wood (both Norfolk), 15th–20th October; Kings-



436. First-winter Chestnut Bunting *Emberiza rutila*, Papa Westray, Orkney, October 2015.

John Hewitt

down Leas (Kent), 18th October; Flamborough Head, 27th–28th October; Durlleston Head (Dorset), 31st October. **Radde's Warbler** *Phylloscopus schwarzi* Up to nine in the period, with records from Cornwall, Devon, Fair Isle, Norfolk (two), Northumberland, Scilly (one or two) and Yorkshire. **Dusky Warbler** *Phylloscopus fuscatus* Up to 18 in the period, with up to seven in Shetland/Fair Isle and others in Co. Cork (two), Cornwall, Kent, Lincolnshire, Norfolk (two), Northumberland, Scilly (two) and Yorkshire. **Subalpine Warbler** *Sylvia cantilans* Mossbank (Shetland), long-stayer to 13th October. **Pallas's Grasshopper Warbler** *Locustella certhiola* Fair Isle, 19th October. **Lanceolated Warbler** *Locustella lanceolata* Fair Isle, 12th October. **Melodious Warbler** *Hippolais polyglotta* Bryher (Scilly), 14th October; Tory Island (Co. Donegal), 15th October; Mizen Head, 27th October. **Paddyfield Warbler** *Acrocephalus agricola* Fair Isle, 8th October. **Blyth's Reed Warbler** *Acrocephalus dumetorum* Kelling (Norfolk), 11th October; Exnaboe (Shetland), 12th October; Wells Wood, 13th–19th October; Quendale (Shetland), 13th–15th October; Cape Clear Island (Co. Cork), 14th–17th October; Cape Cornwall, 15th October; Nanjizal (both Cornwall), 16th October.

Rose-coloured Starling *Pastor roseus* Records from Argyll, Co. Cork, Cornwall (three), Essex and Gloucestershire. **White's Thrush** *Zoothera dauma* Baltasound, Unst, 20th October; Gulerwick (both Shetland), 23rd–24th October. **Siberian Rubythroat** *Calliope calliope* Fair Isle, 20th October. **Red-flanked Bluetail** *Tarsiger*

cyanurus 15 in the period, with six of those arriving 11th–12th October and another three on 16th October: four in Norfolk, with others in Caernarfonshire, Co. Cork, Fair Isle, Kent, Lincolnshire, Northumberland, Orkney, Scilly, Shetland and Yorkshire (two). **Siberian Stonechat** *Saxicola maurus* Orford Ness (Suffolk), 10th October; Quendale, 12th–14th October; Flamborough Head, 14th–20th October; St Mary's, 15th–16th October; Caister (Norfolk), 21st–25th October; Hook-with-Warsash (Hampshire), 24th October. **Isabelline Wheatear** *Oenanthe isabellina* St Mary's, 8th October. **Pied Wheatear** *Oenanthe pleschanka* Skaw, Unst, 14th October; Botal-lack (Cornwall), 21st October; Landguard (Suffolk), 2nd–3rd November.

Blyth's Pipit *Anthus godlewskii* St Mary's, 13th–25th October; Nanjizal, 31st October; Spurn, 5th November. **Olive-backed Pipit** *Anthus hodgsoni* Around 26 arrivals during the period, 17 of those during 8th–13th and another six 18th–19th October. Around seven in Shetland, with others in Cleveland, Cornwall (two), Dorset (two), Co. Durham, Fair Isle (two), Fife (two), Norfolk (three), Orkney, Outer Hebrides, Scilly and Yorkshire (three). **Pechora Pipit** *Anthus gustavi* Foula, 10th October; Melby (both Shetland), 13th October; North Ronaldsay, 13th October. **Red-throated Pipit** *Anthus cervinus* Carrahan Strand (Co. Kerry), 8th–9th October; St Abb's Head (Borders), 11th October; St Mary's, 13th–17th October; Tresco, 18th October; Holme (Norfolk), 19th October.

Two-barred Crossbill *Loxia leucoptera* Termon (Co. Mayo), 15th October. **Rustic Bunting** *Emberiza rustica* Sandside Bay (Orkney), 10th October; Gibraltar Point, 11th October; Yell (Shetland), 13th October. **Chestnut Bunting** *Emberiza rutila* Papa Westray (Orkney), 19th–29th October. **Wilson's Warbler** *Cardellina pusilla* Lewis (Outer Hebrides), 13th–17th October.

Alan Curry



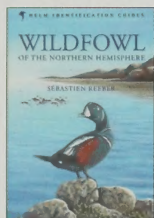
437. Wilson's Warbler *Cardellina pusilla*, Lewis, Outer Hebrides, October 2015.

British Birds Bookshop

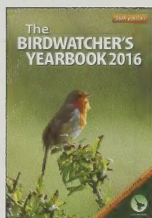
EXCLUSIVE PRICES & FREE UK POSTAGE FOR British Birds READERS

 **WILD** sounds
& books
wildsounds.com

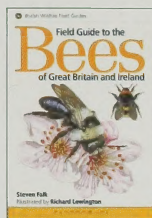
**PRICES
VALID UNTIL
31 DECEMBER**



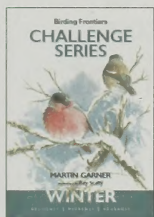
**Wildfowl of
Europe, Asia and
North America**
Sébastien Reeber
HBK £35.00
YOU PAY £31.99



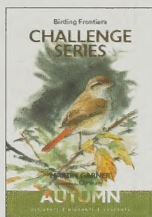
**The Birdwatcher's
Yearbook 2016**
An essential guide
to all aspects of
the British birding
world. Now in its
36th year!
SBK £19.50
YOU PAY £17.00



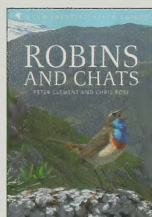
NEW!
**Bees of Great
Britain and Ireland**
Steven Falk &
Richard Lewington
'fully illustrated with stunning
photos & Richard Lewington's
beautiful colour artwork'
SBK £34.99
YOU PAY £31.49



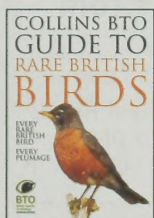
NEW!
**Winter
Birding Frontiers
Challenge Series**
Martin Garner
SBK £24.99
YOU PAY £22.99



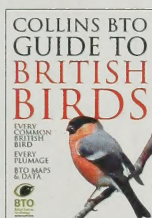
**Autumn
Birding Frontiers
Challenge Series**
Martin Garner
SBK £22.99
YOU PAY £19.99



NEW!
**Robins and Chats
Helm ID Guide**
Peter Clement
and Chris Rose
HBK £60
YOU PAY £49.99
if you quote BB090



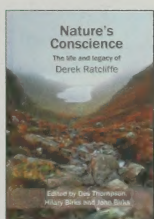
BEST SELLER
**Collins BTO Guide
to Rare British Birds**
HBK £29.99
YOU PAY £25.99
if you quote BB086
SBK £24.99
YOU PAY £20.99
if you quote BB087



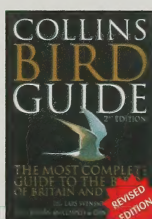
BEST SELLER
**Collins BTO Guide
to British Birds**
HBK £24.99
YOU PAY £19.99
if you quote BB059
SBK £19.99
YOU PAY £15.99
if you quote BB060



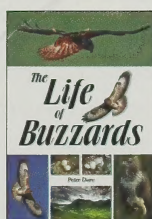
NEW!
**Inglorious:
Conflict in
the Uplands**
Mark Avery
HBK £16.99
YOU PAY £14.99
if you quote BB128



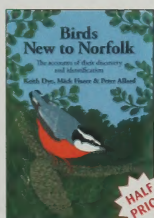
**Nature's
Conscience:
The Life & Legacy of
Derek Ratcliffe**
Des Thompson
SBK £23.00
HBK £30.00



BEST SELLER
Collins Bird Guide
SBK £19.99
YOU PAY £15.99
if you quote BB080
HBK £30
YOU PAY £23.99
if you quote BB081



Life of Buzzards
Peter Dare
'A much-needed &
authoritative
account'
SBK £22.99

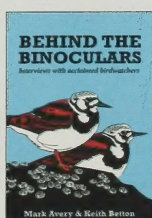


**Birds
New to Norfolk**
Keith Dye,
Mick Fizzer &
Peter Allard
HBK £40.00
YOU PAY £19.99

**Bird Songs & Calls of
Britain & Europe**



401 mostly indexed
species
4 CD SET £39.95
YOU PAY £19.95



**Behind the
Binoculars**
Interviews with
acclaimed
birdwatchers
Mark Avery &
Keith Betton
HBK £16.99

TO ORDER & SEE OUR FULL RANGE VISIT

wildsounds.com/bb

or call the BB Hotline: **01263 741820**

Paying by cheque? Goods will be dispatched after cheque has cleared. Please make cheques payable to WildSounds.

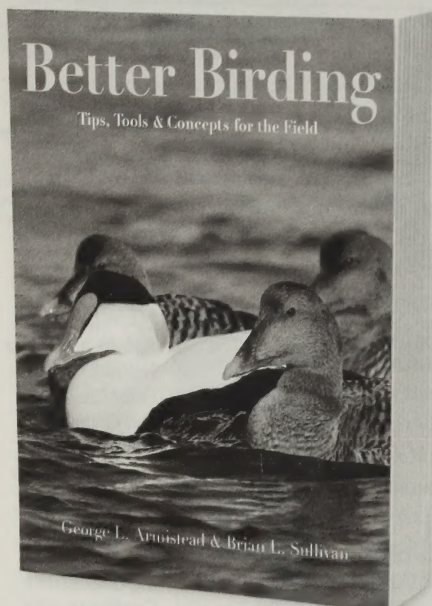
Send to WildSounds, Dept BB, Cross Street, Salthouse, Norfolk NR25 7XH

Buying on the Web: Price Guarantee. Please note that value of the BB code will be deducted from your order when the order is processed and the value of the BB voucher is confirmed.

The price quoted in this advert is the price you will pay, provided the publishers RRP is still valid.

 **WILD** sounds
& books
wildsounds.com

Better Birding puts the thrill
of expert bird identification
within your reach.



Better Birding

**Tips, Tools, and Concepts
for the Field**

George L. Armistead & Brian L. Sullivan

- Reveals the techniques used by expert birders for quick and easy identification
- Simplifies identification with strategies tailored to different groupings of birds
- Features hundreds of photos and composite plates that illustrate the different techniques
- Fosters a wide-angle approach to field birding
- Provides a foundation for building stronger birding skills

Paper \$29.95 £19.95



See our E-Books at
press.princeton.edu



FOCALPOINT
Binoculars & Telescopes

Show Room Sales
01925 730399

*Top Makes, Top Models, Top Advice,
Top Deals, Part Exchange*

www.fpoint.co.uk
Credit/debit cards accepted

**REPAIRS & SERVICING OF
BINOCULARS & TELESCOPES**

**Optrep Optical
Repairs**

SINCE 1960

www.opticalrepairs.com

Tel: 01243 601365


E-mail: info@opticalrepairs.com


Optrep (Ref: BB), 16 Wheatfield Road,
Selsey, West Sussex PO20 0NY
(5 minutes from Pagham HLN)


South West OPTICS


The premier optics and camera specialist in Cornwall





 Swarovski Authorised Dealer

 Zeiss Centre Partner




 Leica Premier Dealer (Optics only)

 Nikon Pro Dealer (Cameras only)

 FujiFilm Authorised Stockist

 Opticron Main Dealer

Also stockists of GoPro,
Manfrotto, Velbon, Lexar,
Leatherman, Buck.

 www.swopticsphoto.com
 [@swoptics](https://twitter.com/swoptics)
 www.swoptics.com
 steve@swoptics.com
Tel: 01872 263444



Naturetrek

A unique selection of dedicated wildlife cruises

St Kilda & the Hebrides

May - 7 days - from £1,595

Alaska - Whales, Bears & Glaciers

July - 13 days - from £6,395

Spitsbergen - Realm of the Polar Bear

June - 11 days - from £4,995

Western Canada - Spirit Bears & Grizzlies

September - 10 days - from £4,595

Dominican Republic - Swimming with Humpbacks

March - 10 days - from £4,395

Galápagos Islands

Several departures annually - 13/20 days - from £4,095

Amazon Wildlife Cruise

June & July - 10 days - from £3,495

Greenland - Bowhead Whales

May - 10 days - from £3,695

India - the Brahmaputra

February & December - 14 days - from £3,595

The Maldives - Mantas & Dolphins

February - 10 days - from £3,495

Baja California - Whale Watching

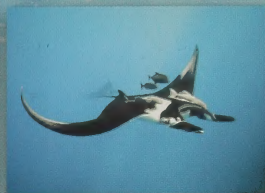
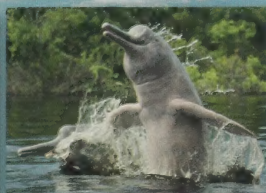
February & March - 14 days - from £4,295



Visit us on
Facebook



01962 733051
www.naturetrek.co.uk



Naturetrek, Mingledown Barn, Wolf's Lane, Chawton, Hampshire GU34 3HJ

DBA VHD

"Smaller, Lighter, Brighter, Sharper", the new DBA VHD takes the Opticron design philosophy to a new level. The all new VHD optical system offers brighter, sharper images compared to its predecessor in a similarly compact package.

Designed around and built for the professional and enthusiast looking for 8/10x42 quality but preferring the size, weight and feel of a smaller binocular, the DBA VHD offers an unrivalled combination of performance, comfort and ergonomics for under £600. 100% made in Japan. 30 year guarantee.

8x42 £579, 10x42 £589



HR ED Fieldsopes

Designed and engineered without compromise, HR ED fieldscopes deliver exceptional optical performance combined with sublime handling and total reliability. 30 year guarantee.

Bodies (Str or 45"): **HR 66 GA ED £699, HR 80 GA ED £849**

Recommended Eyepieces: **SDLv2 18-54x/24-72x £289, HDF T 20xWW/27xWW £139**

HDF T 28xWW/38xWW £159, Range of telephoto options available



Phonescoping Adapters

Opticron smartphone photoadapters are a convenient and inexpensive way of attaching your smartphone to your Opticron spotting scope eyepiece and shooting high magnification photos and video. Available for **iPhone 4/4S, 5/5S & 6** and **Samsung Galaxy S3/S4/S5**. Prices from **£49.95**

Opticron equipment can be tried, tested and purchased at good optical retailers nationwide. For product information, your nearest stockist and to order a **Product Guide** please phone us on **01582 726522** or visit us online at **www.opticron.co.uk**

Opticron. Unit 21, Titan Court, Laporte Way, Luton, Beds, LU4 8EF UK Fax: 01582 723559 Email: sales@opticron.co.uk

